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DEVELOPMENT AND INTERNATIONAL ECONOMIC CO-OPERATION:
TRADE AND DEVELOPMENT

Report of the Secretary-General

Trade embargo against Nicaragua

1. In its resolution 44/217 of 22 December 1989, the General Assembly deplored the continuation of the trade embargo contrary to its resolutions 40/188 of 17 December 1985, 41/164 of 5 December 1986, 42/176 of 11 December 1987 and 43/185 of 20 December 1988 and to the Judgment of the International Court of Justice of 27 June 1986, 1/ and once again requested that those measures be revoked. It also requested the Secretary-General to report to the General Assembly at its forty-fifth session on the implementation of its latest resolution on the matter.

2. In pursuance of that resolution, the Executive Secretary of the Economic Commission for Latin America and the Caribbean was to send a note verbale to the Governments of all States, inviting them to communicate to him any information or action undertaken in the context of the resolution.

3. As the trade embargo was lifted before the note verbale could be sent, the Secretary-General decided, after consulting the Government of Nicaragua, to inform the General Assembly that the report called for in resolution 44/217 was no longer necessary as the aims of that resolution had already been achieved.

1/ See Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America), Merits, Judgment, I.C.J. Reports 1986, p. 14

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SPECIAL ECONOMIC AND DISASTER RELIEF ASSISTANCE: SPECIAL PROGRAMMES OF ECONOMIC ASSISTANCE

Assistance for the reconstruction and development of Lebanon

Report of the Secretary-General

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I. INTRODUCTION

1. The present report is submitted to the General Assembly pursuant to its resolution 44/180 of 19 December 1989. It provides a brief description of the general situation in Lebanon, of the United Nations role and of assistance programmes implemented in the country between August 1989 and July 1990.

II. GENERAL SITUATION AFFECTING ASSISTANCE EFFORTS

2. The period under review witnessed some improvement on the political level, including the establishment of a government. However, continuing hostilities in various parts of Lebanon have had negative repercussions in the economic and social fields.

3. Destruction and damage to private property and public infrastructure networks of electricity, water and telecommunications were enormous. One and a half million persons living in greater Beirut were completely deprived for more than four months of these basic services. Some 25,000 housing units were damaged, and many industries were destroyed. By the end of July 1990, services were restored in most of the region, but electricity and water supply remained severely rationed. There was also considerable destruction of schools and several hospitals, public administration buildings and private businesses.

4. The value of the Lebanese pound depreciated during that period to a historic low of LL 664 per United States dollar, and the country's foreign currency reserves plummeted to $US 600 million at the end of June 1990, fully 40 per cent less than one year earlier.

5. The implementation environment remained difficult and operating conditions in conflict zones were extenuating during the review period. Unpredictability continued to govern every facet of life and activities in these areas. In most of the outlying rural areas (except south Lebanon), peaceful conditions prevailed and activities were carried out normally. The public infrastructure and the economic resources base of the country are devastated; restoration of past levels of economic activity will be very costly.

III. ROLE OF THE UNITED NATIONS

6. Despite serious security setbacks during the period under review, the United Nations system has maintained a minimum presence of senior personnel and has continued core activities, primarily in the fields of humanitarian assistance and essential rehabilitation of public services. The lack of political stability and the continuing violence made impossible projects of reconstruction and development of any significance.

7. Thus, at the present stage, United Nations action remains chiefly focused on the provision of assistance in terms of planning for and implementation of relief and essential rehabilitation programmes, in support of government objectives in this regard. Guiding principles for effective and equitable project assistance implemented by the United Nations are to involve official government structures fully in planning and implementation of assistance programmes; to associate non-governmental organizations with United Nations system efforts to a maximum extent, in particular at the field level; and, whenever feasible, to promote and support programmes of national scope and to select projects and beneficiaries on the basis of specific criteria.

8. United Nations involvement in the development and reconstruction of Lebanon is handled through the Office of the Under-Secretary-General for Political and General Assembly Affairs and Secretariat Services, which, at the central level, provides overall policy guidance and co-ordinates the office of the co-ordinator of United Nations Assistance for the Reconstruction and Development of Lebanon, which, at the field level, co-ordinates and manages economic assistance to Lebanon. At the sectoral level, different United Nations specialized agencies and programmes implement a range of assistance programmes.

9. The Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP), the Office of the United Nations Disaster Relief Co-ordinator (UNDRO), the United Nations Children's Fund (UNICEF), the World Food Programme (WFP) and the World Health Organization (WHO) had senior personnel posted in Beirut during the review period. The United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) maintained its full complement of staff throughout the Palestine refugee areas and was able to deliver its regular services as well as an emergency programme of assistance. Agencies and programmes not physically present in Lebanon implemented certain activities directed from headquarters or regional offices. Present levels of international personnel need to be increased as soon as conditions permit. It is noted that in the recent past, several agencies have made task force arrangements and/or created trust funds for assistance to Lebanon.

10. The United Nations Interim Force in Lebanon (UNIFIL) continued to provide humanitarian assistance on an ad hoc basis in its area of operation in order to alleviate emergency needs. These humanitarian activities included distribution of food, medicaments and blankets to the local population, in particular during winter-time, as well as medical assistance and emergency transportation.

11. The Office of the Co-ordinator of United Nations Assistance for the Reconstruction and Development of Lebanon (UNARDOL) operates system-wide assistance through a joint co-ordinating committee of United Nations agencies. Following the nomination of a new Government late in 1989, the Office established contact and held frequent regular consultations with senior government officials, including the President, Prime Minister, government ministers, the Ministry of Foreign Affairs and the President of the Parliamentary Commission on planning and reconstruction and development. Close working relationships were also maintained with the High Relief Commission, a national institution entrusted with the co-ordination and

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implementation of emergency aid to Lebanon, and the Council of Development and Reconstruction, which is responsible for, inter alia, planning and programming development and reconstruction activities. All these efforts converged to review the socio-economic situation, to assess relief and rehabilitation needs, to discuss policy issues and to follow up on programme implementation, on the one hand, and to support confidence-building towards peace and justice through economic assistance programmes, on the other. In the latter connection, it is noted that on frequent occasions the implementation of economic assistance programmes has kept lines of communication open among government officials, administrators and local leaders. With a view to further supporting government efforts towards efficient management of external assistance, UNARDOL maintained and strengthened contacts with the international and local non-governmental organization communities towards rationalization of assistance programmes and promotion of co-operation among different operators.

12. The Office of the Co-ordinator also continued to service the local Committee on Donor Co-ordination, on which all major donors present in Lebanon are represented. The Committee monitors the situation and the performance of ongoing assistance programmes, provides guidance on policy and priorities for relief and rehabilitation programmes, and undertakes a clearinghouse role in information dissemination. The absence from Lebanon of a number of important donor representatives continues to hamper the fully efficient functioning of the Committee.

13. At the operational level the Office of the Co-ordinator continued to manage and implement the UNDRO programme in Lebanon and to provide information for different situation reports. The Office undertook all substantive preparation for the UNDRO Donor Information Meeting on Lebanon, held at Geneva on 26 June 1990.

14. The Office also supervised projects implemented from funds provided by the United Nations Trust Fund for Lebanon. During the period under review, three projects amounting to $645,000, were completed via UNICEF: (a) emergency repair and rehabilitation of water-supply networks in greater Beirut and Mount Lebanon, $345,000; (b) equipment towards rehabilitation of selected public hospitals, $200,000; and (c) training and assistance to institutions for the handicapped, $80,000.

15. The total requirements for humanitarian assistance and essential rehabilitation of public services in 1989 were estimated by a United Nations inter-agency mission in January 1989 at $87 million. In follow up, the Secretary-General appealed to the international donor community on 21 April 1989 to meet the immediate needs of 150,000 war-affected families. At the end of 1989, identified commitments from official donor sources stood at just $100 million. Estimated total disbursements of funds provided by official donors in 1989 amounted to more than $80 million at the end of 1989; the balance to be implemented during 1990. Nearly 20 per cent of the commitments from official sources in 1989 were to be handled by or via the United Nations system, mainly UNDRO, UNICEF and WHO. The level of assistance provided in 1989 is generous when assessed by any standard and once again proves that the international community responds when a Member State is in need of help.

16. Given concern at the government level about reduced funding levels for Lebanon in 1990, a Donor Information Meeting was held at UNDRO, Geneva, on 26 June 1990 to brief the donor community on the socio-economic situation in Lebanon and to sensitize donors about the basic needs of the war-affected population. At the same time, the Government of Lebanon and UNDRO informed donors of unmet priority needs for which resources were to be mobilized, preferably through the United Nations system.

17. Activities in the field of relief and essential rehabilitation undertaken by United Nations agencies and programmes during the period are reviewed below.

Office of the United Nations Disaster Relief Co-ordinator

18. During the first half of the period under review, UNDRO continued implementing 24 ongoing emergency relief projects in the health, social, education, water and shelters sectors at a total value of over $4 million.

19. Non-food assistance, mostly in favour of displaced persons, comprising removal of garbage combined with rodent control, was started in November 1989 with a $770,000 grant from the European Economic Community (EEC).

20. Of the $100 million assistance in cash, material and services reported to UNDRO in response to the Secretary-General's appeal of 21 April 1989, $2 million were given through UNDRO.

21. The four months of violence in East Beirut, which started at the end of January 1990, also delayed most of the ongoing emergency relief projects. Following the re-establishment of reasonable security conditions, all were finalized and at the end of the reporting period UNDRO began implementing a $4 million assistance programme for the infrastructure (repairs of water, electricity and telephone systems in greater Beirut) funded by EEC.

22. As at 31 July, the total value of emergency assistance to Lebanon reported to UNDRO in 1990 amounted to $8.73 million, of which $2.27 million were given to UNDRO.

23. During the reporting period UNDRO issued four situation reports to keep the donors informed. In order to facilitate the co-ordination of emergency relief assistance to Lebanon and to supervise its own programmes the UNDRO Office in Beirut continued its activity through a delegate and/or through the officer-in-charge of UNDP and the Office of the Co-ordinator. In Geneva UNDRO organized in June 1990 an information meeting on Lebanon, attended by delegates from 17 donor countries and by high-level representatives of the Lebanese Government and of several international and non-governmental organizations working in Lebanon.

United Nations Children's Fund

24. Following the cease-fire of 22 September 1989 and until the end of January 1990, a period of relative calm allowed a major improvement in the situation of children through the reopening of schools, which had been closed for the seven previous months. During the same period, important repairs were done on

the main water supply system that had incurred heavy damage during the previous conflicts, particularly in the Beirut area. Intensive efforts were also made to reactivate the health services, in both hospitals and health centres. Unfortunately, the resumption of hostilities in the eastern part of Beirut on 31 January again caused the situation to deteriorate, forcing schools and health centers to be closed, placing a heavy burden on hospitals, and cutting off the flow of regular water supplies. This situation lasted until May 1990, when relief supplies could again be distributed and regular assistance to health services and schools given.

25. In the absence of a long-lasting political solution, the quality of life of children remains dangerous and unsatisfactory. Irregular services for children in health and education, as well as water quality and supply problems, continue to make family life extremely difficult and delivery of assistance irregular and unpredictable.

26. The UNICEF response to that situation during the reporting period included the activities described in the following paragraphs.

27. In the water-supply sector, major repairs and rehabilitation were undertaken during the period September 1989-January 1990 on the main systems in Beirut and surrounding areas, using funds from UNDRO ($300,000), the Netherlands ($118,000) and United Nations Trust Fund for Lebanon ($300,000). Most of these works were of an emergency repair nature and allowed re-establishment of about 60 per cent of the normal water distribution in the city. Activities were considerably reduced during the period February-May 1990 owing to hostilities.

28. Following a reassessment of new damage in June 1990, a new rehabilitation programme has been planned to repair the latest damage and will be implemented using a fund of ECU 900,000 provided by the EEC to UNICEF through UNDRO. The regular activities of UNICEF in support of repair, maintenance and improvement of the water supply in the rest of the country continued during this same period, under a multi-year project of $3.1 million funded by the Federal Republic of Germany.

29. During the same period, the quality of water became problematic throughout Lebanon. UNICEF undertook, from March through June 1990, a survey on the main water sources to assess the nature and gravity of the problem. An appropriate programme of health education and water treatment will be planned based on those results.

30. In the health sector, UNICEF continued the regular provision of essential drugs to 725 dispensaries throughout Lebanon despite ongoing hostilities and served an average of 80,000 patients every month. This programme was largely funded through UNICEF resources with some supplementary funding from the United Kingdom, the Netherlands and Australia, at a total cost of $750,000.

31. The needs of seven governmental hospitals were assessed by UNICEF after the September 1989 cease-fire and urgently needed supplies were ordered, using a grant of $200,000 from the United Nations Trust Fund. A project to equip and train handicapped children was also organized with $80,000 from the same Fund.

32. Regular UNICEF Programmes to protect young children through immunization and control of diarrhoeal diseases continued throughout the reporting period. A nation-wide cease-fire was respected by all parties for two days each in the months of April, May and June 1990, while health workers vaccinated children in a campaign to attain universal childhood vaccination. A health campaign in June, July and August 1990 was organized to fight the outbreak of diarrhoeal diseases aggravated by the deterioration of water quality.

33. In the education sector, the most urgent need was to provide assistance in the rehabilitation of primary schools. An emergency project was developed in October 1989 using a fund of $500,000 from the Netherlands. In co-operation with Save the Children Federation, this project repaired 306 primary schools in Beirut and surrounding areas. Fortunately, most of this project was completed before outbreak of hostilities on 31 January 1990.

34. The UNICEF programme on Education for Peace, which was initiated in the summer months of 1989, continued more successfully with the training of almost 5,000 young monitors during the first half of 1990. Summer camps were organized for a record number of 50,000 children by end September 1990. The special children's magazine, SAWA, that was also initiated in early 1989, continues to be distributed to 70,000 children every six weeks.

35. During the period, close co-operation continued to be maintained with a large number of international and local non-governmental organizations; special co-ordination was maintained with the International Committee of the Red Cross (ICRC) during the crisis particularly for repairs of water supplies in dangerous areas. Co-ordination with other United Nations agencies, particularly WHO, was maintained through regular meetings.

United Nations Development Programme

36. The intermittent violence that raged in Beirut and surrounding regions during the third quarter of 1989 and the first quarter of 1990 rendered the operational situation difficult and slowed down the implementation of technical co-operation activities.

37. Despite those constraints, UNDP programme activities continued to retain relevance to the Government's development needs.

38. The indicative planning figure (IPF) resources committee in 1989/90 amounted to about $1.9 million and covered the 11 operational projects described hereunder.

39. The National Accounts Study, initiated in response to UNDP Governing Council decision 88/31, aimed at compiling the necessary data needed for the adjustment of Lebanon's Fourth Cycle IPF and the determination of the IPF for the Fifth Cycle, will be completed by the end of October 1990. Nevertheless, preliminary per capita GNP estimates for 1988 and 1989 were submitted to UNDP headquarters in May and June respectively.

40. With the gradual improvement of the situation during the second quarter of 1990, UNDP extended through year end three FAO executed projects related to animal health, greenhouses, and an agricultural data bank in order to make up for delays and permit the attainment of their immediate objective.

41. Project activities related to olive production in northern Lebanon and cereal seed production in the Bekaa proceeded as programmed. Moreover in response to the Government's request, UNDP approved preparatory assistance for two projects: (a) rehabilitation of the Ministry of Agriculture, which is currently being executed by an FAO consultant; and (b) institutional development of non-governmental organizations, which is expected to be implemented by a national consultant shortly.

42. In addressing human resources development, nine fellowships have been awarded through Umbrella Fellowships project to Lebanese officials to participate in training courses, workshops and seminars in the fields of prevention and treatment of congenital dislocation, educational planning and administration, vocational training, fertilizer marketing, safe water and sanitation. Additionally, under a telecommunications training project, four fellowships permitted national delegates to participate in various telecommunication disciplines. Five other courses have been programmed already for implementation.

43. In response to the Government's request UNDP reactivated a civil aviation project. Technical assistance needs in that sector will be the subject of an assessment mission of the International Civil Aviation Organization (ICAO).

Office of the United Nations High Commissioner for Refugees

44. The tense security situation in Lebanon during 1989 and early 1990 exacerbated the living conditions of the refugees and stateless persons there, estimated at 4,415, and of whom 1,400 were under the UNHCR mandate. The delays and problems encountered in obtaining legal status, residence permits and other documentation and the acute economic crisis also aggravated their difficulties in finding employment. They thus became increasingly in need of assistance. Between 1 January and 25 May 1990, over 100 persons, mostly of Iraqi origin, approached the UNHCR Regional Office to seek refugee status.

45. The type of assistance provided during 1989 and continued in 1990 was mainly directed towards the most needy and destitute cases and included medical services, counselling, education and, to a lesser extent, resettlement. Activities continued to place emphasis on the promotion of durable solutions through naturalization and local integration of the refugees and stateless persons. The UNHCR programme amounted to some $40,200 for the annual programme and to $650,000 for the special programme. Under the latter programme, UNHCR contributed towards the repair of a damaged warehouse in a college and the improvement of an annex building at the Islamic Hospital in Tripoli. Since 1988, when this project was planned, the security situation has made completion impossible.

United Nations Relief and Works Agency for Palestine Refugees in the Near East

46. A brief summary of major projects and operations carried out by UNRWA in Lebanon during the reporting period is set out below. A more comprehensive review of UNRWA activities in Lebanon and its other fields of operation is contained in the Commissioner-General's annual report to the General Assembly. 1/

47. Under normal circumstances, UNRWA provides services only to Palestine refugees, but in view of the situation prevailing in Lebanon the Agency continued to extend emergency assistance and most of its regular programmes, including education, to the entire Palestinian community. It also actively participated with other United Nations agencies and international relief organizations in activities to provide assistance to the Lebanese population in general. Thus, for instance, from January 1990 onwards UNRWA made available water tankers to help the Government in its efforts to supply water to Beirut, and it provided relief in the form of food and other basic necessities to Lebanese families in Dbayeh.

48. During the 1989/90 school year, the 76 UNRWA schools in Lebanon provided education to 33,300 pupils in the first 10 years of the education cycle. In addition, some Lebanese children were taken into UNRWA schools where spaces were available, especially in remote areas. During the reporting period, one new school for 3,000 pupils was under construction at Ein el-Hilweh to replace old dilapidated premises. In the 1989/90 academic year, the Agency's Siblin Training Centre provided 640 training places covering a total of 18 vocational and technical courses. The budget for the UNRWA education programme in Lebanon in 1990 was $12.5 million.

49. The UNRWA health programme in Lebanon is primarily community-health oriented and comprises curative and preventive medical care services, environmental health services in refugee camps and a nutrition and supplementary feeding service. When hospital care is required, it is provided through hospitals with which the Agency has contractual arrangements or by reimbursement of costs incurred in government hospitals. During the reporting period, UNRWA health services were disrupted in certain areas when heavy rounds of fighting or shelling prevented access of staff and refugees to health centres. Nevertheless, in spite of the prevailing conditions, some of the Agency's health programmes were improved and construction projects completed included the reconstruction of a health centre in Shatila and renovation of another in Rashidieh. The budget for the health programme in Lebanon was $7.9 million.

50. During the period under review, the regular UNRWA welfare programme provided assistance to more than 35,000 persons registered as special hardship cases. In addition, the shelter assistance programme to help refugees whose shelters were damaged or destroyed in the so-called "camp wars" was continued. By the end of June 1990, more than 1,250 shelters had been repaired or reconstructed in Burj el-Barajneh and work was continuing, albeit more slowly in Shatila. Over and above its regular relief programme, UNRWA implemented a programme of emergency measures in Lebanon, the largest single component of which was food aid. During the reporting period, the Agency carried out four emergency general ration distributions of flour, sugar and rice to approximately 230,000 beneficiaries.

Other emergency measures included distribution of relief supplies, water, clothing, mattresses, blankets and kitchen kits as well as medical treatment and hospitalization. In February 1990, Dbayeh camp near Jounieh, which had been virtually unscathed in 15 years of civil war, was caught in shell cross-fire and around 20 per cent of shelters were damaged or destroyed. Within three days UNRWA carried out an initial inspection and took in 16 tons of flour. Additional supplies, including blankets, clothing, food and cash were quickly made available. The regular budget in Lebanon in 1990 was $6.1 million while the budget for emergency operations was $10 million.

51. The total UNRWA budget for the provision of programmes in Lebanon in 1990, including common services and administration costs is more than $40 million.

World Food Programme

52. The increasing shortage of foodstuffs in the market and the continuing rise in prices have resulted in an ever larger part of the population having difficulty in meeting their basic food requirements. This is true especially for those Lebanese who have been displaced as a result of the recent violence.

53. Over the years, WFP has continued to provide food aid both as emergency assistance and for development purposes to Lebanon. Distribution under the emergency operation LEB 3168/Exp. II, Emergency assistance for needy and displaced persons, was completed in October 1989. Under the three phases of this operation, during three years, food rations had been distributed to 300,000 beneficiaries at a total cost of $13.1 million. Further assistance, under operation LEB 4070, Emergency food assistance to displaced persons, was approved on 7 June 1989 at a cost of $1.2 million and distribution was completed in March 1990. Food from WFP in the form of dry take-home family rations is distributed by the Government's High Relief Commission through regional and local social welfare sub-committees to the displaced population.

54. During the period under review, WFP was also requested to arrange for the transport and to monitor the distribution of emergency food assistance from bilateral donors.

55. Project LEB 524/Exp. II, Feeding programme for children and youths in institutions and for vulnerable groups in mother and child health centres, with a total cost to WFP of $14.8 million, was approved by the twenty-third session of the Committee on Food Aid Policies and Programmes in June 1987. This expansion, which followed a previous project for the same categories of beneficiaries, commenced operation in April 1988 and will continue through 1991.

56. The basic objectives of WFP assistance are (a) to maintain a satisfactory diet and increase the food intake of the underpriviledged and vulnerable groups, including orphans, abandoned, handicapped and destitute children, expectant and nursing mothers and pre-school children, needy primary schoolchildren and old people, through food aid to socio-educational institutions, mother and child health centres and primary school canteens, and (b) to enable those institutions to

improve and extend their infrastructure and facilities through the release of funds, as a result of WFP food aid, which would otherwise have had to be used for the purchase of local food.

57. The institutions assisted by the Office of Social Development in the Ministry of Labour and Social Affairs and receiving assistance from WFP provide food for the poorest and most underprivileged sectors of the population. The WFP food is used, together with local foods, to provide cooked meals in institutions located throughout the country and through two primary school canteens, while dry take-home rations are distributed monthly through the mother and child health centres to expectant and nursing mothers and to pre-school children (six months to five years). During the second year of the project, in 1989/90, 26,000 beneficiaries in residential and day care centres, 1,200 primary schoolchildren in school canteens and 24,000 mothers and pre-school children in mother and child health care centres received assistance.

Food and Agriculture Organization of the United Nations

58. Since the appeals by the Secretary-General of the United Nations and the Director-General of FAO in April and May 1989, conditions have continued to deteriorate in Lebanon. Public services are paralysed. The economy is at a standstill. The security situation makes relief activities extremely difficult. Much of the agricultural population has been displaced, farms have been abandoned, markets are in disarray, labour problems persist, there is a lack of energy, rural administration is severely hampered and inflation continues to rise. Thus even though weather has been favourable for cropping, FAO activities are impeded and delayed. While maintaining operations to the extent possible, FAO monitors the overall situation in order to resume a greater level of activity when conditions permit.

59. The current FAO programme in Lebanon is supported by three funding sources: UNDP, trust funds and the FAO Technical Co-operation Programme.

60. Five projects funded by UNDP were recently extended until 31 December 1990. They total $1.3 million in value and include animal health, agricultural documentation, protected cultivation, olive production and seed production. These activities are managed and executed by national directors and consultants under the supervision of the FAO representative.

61. In addition, the UNDP-funded project for preparatory assistance for the restructuring of the Ministry of Agriculture is being implemented. An expert is in Lebanon consulting with officials on the formulation of a strategy and requirements. To date the expenditure of $6,000 has been approved.

62. One trust fund project, for agricultural planning, is currently operational. Its total value is $680,000. Other trust fund projects have not yet been started owing to the security situation; for example, a project for the reinforcement of the capacities of the Ministry of Agriculture would be supported by the Italian Government at the equivalent of $1 million.

63. Two regular programme (Technical Co-operation Programme) projects are operational: the management of hill lakes (value $97,000), and a campaign against migratory pests ($268,000).

64. The FAO Global Information and Daily Warning System on Food and Agriculture regularly monitors the crop and food supply situation in Lebanon. FAO assessments are published in the System's monthly report "Foodcrops and shortages" in order, inter alia, to assist donor countries with decisions concerning the provision of aid.

65. FAO has seven emergency assistance projects ready for funding, totalling $14.459 million. The projects include the rehabilitation of food-grain silos in Beirut port, the rehabilitation of agricultural activities affected by the hostilities and the floods of 1987 and the provision of vaccines, fertilizers, seeds and other inputs.

International Labour Organisation

66. During the period under review, ILO provided the following assistance to Lebanon:

(a) One fellowship for participation in the ILO/United Nations Fund for Drug Abuse Control Regional Workshop for Orientation and Programme Formulation on Drug Rehabilitation ($1,500);

(b) One fellowship for participation in a seminar on collective bargaining held in the United States of America ($3,000);

(c) One fellowship for participation in a training course at the Turin Centre ($6,500).

United Nations Educational, Scientific and Cultural Organization

67. Given the absence of a UNESCO representative or any technical mission from that agency in Lebanon, not all the proposed projects have been implemented. Nevertheless, UNESCO has contributed, within its field of competence, to the following activities:

(a) Invitation to a Lebanese specialist to participate in the meeting of experts on the popularization of science ($3,000);

(b) Financial contribution to the conference organized at UNESCO by the International Peace Research Association, in which nearly 60 Lebanese non-governmental organizations took part ($25,000);

(c) One training fellowship for a Lebanese specialist in special education ($8,000).

68. Under the participatory programme, $75,000 was granted to Lebanon in 1989 for the following activities:

(a) Assistance in the translation and publication in Arabic of diplomatic and consular documents pertaining to the history of Lebanon and countries in the Near East from the seventeenth century to the present ($20,000);

(b) Purchase of equipment for the Rural Development Welfare Association Handicrafts Centre ($20,000);

(c) Underwriting the cost of acquiring objets d'art and representative articles of popular traditions in Lebanon and the mountain regions ($15,000);

(d) Restoration of historical monuments at Tripoli ($10,000);

(e) Lebanese Association for Ottoman Studies ($2,000);

(f) Providing equipment for the library of the Tripoli Cultural Club ($3,000);

(g) Partial funding for specialized training for one Lebanese woman in the field of publicity techniques, public opinion surveys and dissemination ($5,000).

69. As part of the participatory programme, $37,500 was granted to Lebanon in 1990 in the following activities:

(a) Publication of four volumes of diplomatic and consular correspondence pertaining to the history of Lebanon and countries of the Near East from the seventeenth century to the present ($15,000);

(b) Printing and binding of publications on the topic "East-West" ($10,000);

(c) Acquisition of equipment for the public library of the Tripoli Cultural Association ($7,500).

70. In addition, a $20,000 contract was concluded with the Permanent Delegation of Lebanon for the preparation of a directory of records relating to the political, economic, cultural and social relations between Arab countries and Europe from the sixteenth century to 1945.

71. In co-operation with the Lebanese Ministry of Education, UNESCO has updated a plan of work for the "Development of science teaching" project, financed by the Islamic Development Bank, which will make it possible to secure assistance for the transport, equipment and training of teachers under the project.

72. Preliminary proposals have been drafted in consultation with the Lebanese authorities for submission either to the financing sources of the United Nations or to other extrabudgetary sources in conjunction with the non-governmental organizations concerned.

World Health Organization

73. Following a two-person mission from WHO headquarters to Lebanon in February 1990, WHO assisted Lebanon in the provision of emergency medical supplies valued at $104,000, which consisted mainly of emergency surgical supplies and materials that are currently being split into several packs for distribution to hospitals in the area of recent conflict in East and West Beirut.

74. WHO has opened a Trust Fund Account for Lebanon, which is meant to provide the Government of Lebanon with the required funds for a possible reconstruction/rehabilitation plan of the health infrastructure once hostilities cease in the country.

75. At the request of the Lebanese authorities, a two-person mission visited Lebanon from 12 to 25 July 1990 to assist the national authorities in assessing the health needs in the recent conflict area and to assist the Ministry of Health and Social Affairs in developing an overall rehabilitation/reconstruction plan for the health infrastructure of the country. A draft proposal has been prepared and is being submitted to the Ministry for ranking of projects according to priorities and for approval.

76. Subsequently, a fund-raising effort will be undertaken in co-operation with the Lebanese authorities and WHO.

IV. ACTIVITIES OF THE COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

77. During the reporting period, there were very few public investment activities by the Council, which since its institution in 1977 and until 1988 represented the bulk of public investment activities. On the one hand, this is due to the fact that the prevailing insecurity made it physically impossible to execute and implement projects, and hence discouraged foreign lenders from engaging in new financial agreements with the Government. On the other, the tight internal financial situation, whereby current expenditures could only be met with difficulty, called for austerity measures and did not allow the authorities to launch new locally financed investment projects.

78. In fact, the only new commitments made by CDR during that period were made against foreign sources of finance and totalled LL 5,152 million equivalent. These included LL 2,369 million equivalent for airport equipment to be financed in the context of a bilateral loan agreement with the French Government and LL 2,783 million equivalent, of which LL 1,988 million equivalent for hospital equipment and LL 795 million equivalent for consumable printing supplies for the Centre for Education Research and Development, to be financed from a German Government grant.

79. Estimated expenditures on activities of the Council in 1989 only (estimates for the first half of 1990 are not available as yet) totalled LL 14,592 million equivalent. Of this amount, LL 10,000 million were paid from local sources to road contractors for works completed prior to 1988 and represented both payments against

contracts and price revisions incurred as a result of wage increases, the rise in cost of construction materials and the deterioration of the exchange rate to the Lebanese pound versus foreign currencies. The balance of LL 4,592 million equivalent was financed from foreign sources as follows:

(a) EEC grants and special assistance totalling LL 947 million equivalent, including LL 630 million for the primary and secondary school rehabilitation project, LL 312 million for the continuation of the Beirut water supply project and LL 5 million for a comprehensive study;

(b) French financial bilateral loan agreements totalling LL 3,645 million equivalent, 2/ including LL 836 million equivalent for the telephone exchange, LL 330 million equivalent for waste management, LL 2,018 million equivalent for the procurement and installation of computers for public administrations, and LL 461 million equivalent for equipment for the Lebanese University School of Engineering.

80. Total commitments of the Council in real terms - if one considers the main of inflation to be represented by the deterioration of the Lebanese pound versus foreign currencies - in the January 1989-June 1990 period represent only about 7.5 per cent of the average annual commitments during the period 1977-1987, whereas expenditures by the Council in real terms in 1989 represent about 2.6 per cent of the average annual expenditures during the same 11 year period.

81. It should also be noted that during the period under review, the most significant development with regard to reconstruction and development has been the proposal of the Arab Troika supporting the Government of Lebanon in the implementation of the Taef agreement to create an international fund for assistance to Lebanon of up to $2,000 million. The proposed fund is to be the central fund for external resources towards reconstruction and development of the country, and it is the political expression of the support of the Arab and international community towards the rehabilitation and reconstruction of Lebanon.

V. CONCLUSIONS

82. Despite serious security setbacks, the United Nations system has continued to deliver relief and rehabilitation assistance to Lebanon from its own resources and to help co-ordinate and implement the contributions of Member States and of international organizations. This assistance has significantly alleviated the suffering of the war-effected and deprived population of Lebanon.

83. The United Nations system shall continue action in support of the Government and in full co-operation with the donor community, for which adequate human and financial resources are required.

84. Restoration of peace and stability is a prerequisite for the United Nations to be able to implement fully the mandate of General Assembly resolution 44/180. None the less, the Secretary-General remains committed to the emergency relief efforts in Lebanon. He also hopes that the international community will provide support

for the Secretary-General's Trust Fund for Lebanon and UNDRO towards meeting urgent socio-economic needs until such time as the situation permits expanding the emergency relief efforts to reconstruction and development.

Notes

1/ Official Records of the General Assembly, Forty-fifth Session, Supplement No. 13 (A/45/13).

2/ Totals may be underestimated owing to the long time lag between the drawing date and the date on which CDR is advised of it.

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NOTE VERBALE DATED 3 OCTOBER 1990 FROM THE SECRETARY-GENERAL TO THE PERMANENT REPRESENTATIVES OF MEMBER STATES

The Secretary-General of the United Nations presents his compliments to the Permanent Representative of ... to the United Nations and has the honour to inform him of the following, with the request that this information be also transmitted to his Government.

At the request of the Federal Minister for Foreign Affairs of the Federal Republic of Germany, a letter dated 3 October 1990 from said Federal Minister for Foreign Affairs is being brought to the notice of all Member States, principal and subsidiary organs of the United Nations, as well as of the specialized agencies and other organizations affiliated with the United Nations (see annex). That letter relates to the fact that, through the accession of the German Democratic Republic to the Federal Republic of Germany with effect from 3 October 1990, the two German States have united to form one sovereign State. That State, as a single Member of the United Nations, remains bound by the provisions of the Charter in accordance with the solemn declaration of 12 June 1973. 1/

The said Federal Minister for Foreign Affairs also informed the Secretary-General in the above-mentioned letter that as from the date of unification, the Federal Republic of Germany will act in the United Nations under the designation "Germany".

The Secretary-General will take action, within the scope of his administrative responsibilities, to give effect, from 3 October 1990, to the notification in the attached letter.

1/ See General Assembly document A/9070.

ANNEX

Letter dated 3 October 1990 from the Federal Minister for Foreign Affairs of the Federal Republic of Germany addressed to the Secretary-General

I have the honour to inform you that, through the accession of the German Democratic Republic to the Federal Republic of Germany with effect from 3 October 1990, the two German States have united to form one sovereign State, which as a single Member of the United Nations remains bound by the provisions of the Charter in accordance with the solemn declaration of 12 June 1973. As from the date of unification, the Federal Republic of Germany will act in the United Nations under the designation "Germany".

I have the honour to request you to bring the contents of the present letter to the notice of all Member States, principal and subsidiary organs of the United Nations, as well as of the specialized agencies and other organizations affiliated with the United Nations.

Hans-Dietrich GENSCHER

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SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENTS AND THEIR IMPACT ON INTERNATIONAL SECURITY

Report of the Secretary-General

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I. INTRODUCTION

1. On 7 December 1988, the General Assembly adopted resolution 43/77 A, entitled "Scientific and technological developments and their impact on international security". Paragraph 1 of the resolution reads as follows:

> "The General Assembly,
>
> "...
>
> "1. Requests the Secretary-General to follow future scientific and technological developments, especially those which have potential military applications, and to evaluate their impact on international security, with the assistance of qualified consultant experts, as appropriate, and to submit a report to the General Assembly at its forty-fifth session."

2. To assist the Secretary-General in the implementation of paragraph 1 of resolution 43/77 A, a consultative meeting was held at United Nations Headquarters on 31 May 1989. It was attended by some of the original co-sponsors of resolution 43/77 A and a small number of scientists and strategic analysts. The meeting discussed the wider context of the current debate on the interactions between the issues of technology, strategy and international security. It was felt important to build upon and broaden the political consensus for addressing the qualitative aspects of the arms race. The meeting also served to identify the broad fields in which scientific and technological developments are taking place.

3. In his report to the forty-fourth session (A/44/487 and Add.1 and 2), the Secretary-General informed the General Assembly of his intention to invite qualified consultants to prepare individual assessments in their specific areas of expertise in five major fields of technology.

4. On 15 December 1989, the General Assembly adopted resolution 44/118 A, which took note of the preliminary work undertaken by the Secretary-General and requested him to report to the Assembly at its forty-fifth session.

5. Individual assessments of scientific and technological developments were prepared by invited experts in the fields of nuclear technology, space technology, materials technology, information technology and biotechnology.

6. From 16 to 19 April 1990, a high-level conference on "New trends in science and technology: implications for international peace and security" was held at Sendai, Japan. The conference was attended by scientists, strategic analysts, arms limitation/disarmament experts, politicians and diplomats from over 20 countries.

7. The conference at Sendai addressed issues of technological change and global security, new technologies and the search for security in the post-cold war era, and national policy-making and international diplomacy in an era of rapid technological change. General approaches to technology assessment and technology trends in selected areas were discussed in separate working groups. The individual

assessments prepared by experts in five specific fields were discussed by the working group on "Technology Trends in Selected Areas" under the chairmanship of Sir Ronald Mason, former Scientific Adviser to the Ministry of Defence, United Kingdom of Great Britain and Northern Ireland. The outcome of those discussions is included below.

8. The present report is submitted to the General Assembly in pursuance of resolutions 43/77 A and 44/118 A. In fulfilling his mandate, the Secretary-General, in his note verbale dated 8 February 1989, drew the attention of the Member States to paragraphs 2 and 3 of resolution 43/77 A. The replies received were included in the Secretary-General's report to the forty-fourth session of the General Assembly (A/44/487 and Add.1 and 2). In another note verbale, dated 16 February 1990, the Secretary-General drew the attention of the Member States to paragraphs 3 and 4 of resolution 44/118 A. Replies were received from the Byelorussian Soviet Socialist Republic, Italy (on behalf of the European Community), Mexico, Togo, the Ukrainian Soviet Socialist Republic and the Union of Soviet Socialist Republics. All the replies have been taken into account in the preparation of the present report.

II. NEW TECHNOLOGIES AND INTERNATIONAL SECURITY: AN OVERVIEW

9. In recent years, concern has been expressed by some commentators that modern technology has developed a momentum of its own and that technological change is outpacing the political process of seeking security at lower levels of armaments and armed forces. In the light of political events in the past two years, there is now a supplementary concern that modern technology may not be responding in directions that support the consolidation of political developments. Thus, in some respects modern technological advances may be hindering rather than helping the pursuit of international security.

10. The dramatic improvement in East-West relations has brought about a major change in the international security environment. With the implementation of the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Elimination of Their Intermediate-Range and Shorter-Range Missiles (INF) 1/ in 1987-1988, an entire class of nuclear-weapon systems is being eliminated. New opportunities have opened up for the reduction, elimination and destruction of nuclear, chemical and conventional weapons. In the political arena, with some exceptions, there is a dominant trend towards the replacement of confrontation by dialogue and rivalry by co-operation. In addition, the world as a whole is facing an unprecedented array of non-military threats to international security, such as ecological degradation, environmental pollution and political tensions arising from the persistent economic gap between industrialized and developing countries.

11. In this changed international security environment, the concerns over the nature and direction of technological change are essentially twofold. First, there is an overriding anxiety that modern technology should assist rather than hinder the positive trends in international relations. More specifically, there are concerns that the application of new technologies might result in continued

qualitative development of nuclear weapons even as efforts are being made for their reduction and elimination. The use of new technologies for the qualitative modernization of conventional weapon systems could bring dramatic increases in their range, accuracy and lethality. Technological advances could also lead to the development of weapons based upon the application of advanced physical principles such as beam weapons.

12. A second and more philosophical concern is that significant aspects of modern technology do not address many of the pressing problems facing the world. While it is generally recognized that a diffusion of technologies would be instrumental in closing the economic gap between the industrialized and developing countries, there are also doubts whether the international community is well-postured to deal with some of the harmful side-effects of technological proliferation. Particularly pronounced in this respect are misgivings over the likely development and acquisition of nuclear, chemical and biological weapons by countries at present outside the existing agreements for arms limitation. Apprehensions over the possible misuse of a combination of several available technologies by a national or sub-national group have been heightened by the persistence of tensions and unresolved conflicts in certain parts of the world.

13. Technology by itself does not threaten anyone. Efforts to steer the direction of technological changes can only make progress if the realities of contemporary life are taken into account. The current state of technological advancement represents decades of cumulative knowledge that cannot be erased. It is also unrealistic to believe that the process of technological innovation can be frozen to prevent its military application. However, the very technologies capable of improving existing weapon systems can also often be used in their limitation, destruction or conversion. A few of the many areas in which militarily capable technologies could actually promote rather than threaten international security are the use of communication technologies for advance warning of impending conflicts, the employment of remote-sensing techniques for verification and the development of appropriate techniques for ecologically safe methods of weapons disposal.

14. A number of new technologies are now in public view, which, if fully developed and deployed, could have implications for existing military capabilities. The following review of the major fields of scientific and technological developments in this regard is necessarily brief and more illustrative than exhaustive. It provides a basic description of the nature of technologies involved and a broad survey of major trends with some illustrations of their possible civilian and military applications.

III. TECHNOLOGY TRENDS IN SELECTED AREAS

A. Nuclear technology*

15. The term nuclear technology is broadly interpreted as "the utilization of various properties of atomic nuclei". After three to four decades of rapid growth, nuclear technology has matured and is now at a point where no new major breakthroughs seem likely in the near future. Current trends are largely extrapolations of past developments.

16. The two important sub-fields of nuclear technology are nuclear explosive devices and nuclear power production. Methods for disposal and production of "special nuclear materials" are also relevant, as are potential new military applications such as X-ray lasers and particle beams. Although it is very important from a strategic viewpoint, the development of delivery vehicles and weapons platforms is not scientifically related to nuclear technology.

Nuclear explosive devices

17. A nuclear warhead contains an explosive device, which derives its energy either from fission or from a combination of fission and fusion. Major steps in the development of fission explosive devices were taken even before the mid-1950s and no significant improvements are foreseen. The possibility to use uranium-233 as a weapons material was recognized long ago but does not seem to offer any substantial benefits.

18. It is not quite clear whether there is a technical upper limit to the fission yield. What is known is that there is no lower limit to the explosive yield of a fission device. In the 1960s and again in the late 1970s, there was a concern that "mini-nukes" with very low yields might tend to blur the borderline between conventional and nuclear weapons. For a time the United States deployed a short-range missile named "Davy Crockett", carrying a warhead with a reported yield of 0.25 kt or less. The weapon was removed from active service in 1971 without replacement. No similar weapons have since been deployed either by the United States or other countries since the 1960s.

19. Since it was first demonstrated in 1951, the technique to exploit fusion in a nuclear explosive has been perfected at a rapid pace to build warheads with virtually unlimited yield; to derive energy from the fission of uranium-238; and to improve further the yield-to-weight ratio of warheads. Substantial efforts have been made over the last 25 or 30 years to design a fusion weapon without a fission trigger, in particular, by means of a laser-induced fusion. For all practical purposes the problem remains unsolved.

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* Contributions to the present section were made by Dr. Tor Larsson, Co-ordinator for Nuclear Weapons Related Research, National Defense Research Establishment, Stockholm and Dr. John Hopkins, Associate Director-at-Large, Los Alamos National Laboratory, New Mexico, United States of America.

20. There is supposedly no upper limit to the explosive yield of a thermonuclear device. However, the quest is no longer for larger yields. The general trend now is towards smaller and lighter nuclear warheads. The most important possibilities seem to lie in the "tailoring" of nuclear warheads to enhance or suppress different explosion effects. Examples are enhanced radiation weapons (ERW), which give a pulse with an expanded frequency range or a shaped radiation field, and earth-penetrating warheads to maximize ground shock against underground installations. None of these warhead modifications have yet been achieved.

21. In general, advances in developments of warheads will depend upon continued testing. Testing is also deemed necessary for a new nuclear-weapon State wanting to develop thermonuclear warheads or advanced fission devices. It is debatable whether stockpile maintenance is possible without testing, but most effect studies could be done by means of simulation.

Nuclear power production

22. Nuclear power has several applications, of which energy production for civilian needs is obviously the most important. Concerns regarding the relationship between nuclear power and weapons proliferation have not been allayed, but the actual development has by no means followed earlier worst-case scenarios. Light-water reactors, fuelled with low-enriched uranium, are still prevalent and will probably remain so throughout the 1990s. Projections of nuclear energy demands have been revised downwards repeatedly. Thus, to date, there has been no severe shortage of nuclear fuel, no large proliferation of enrichment or reprocessing facilities and no establishment of a "plutonium economy".

23. In the public eye, environmental concerns play an important role. Those concerns have to do both with the possibility of severe accidents, as the one at Chernobyl, and with radioactive waste management. Current development efforts in reactor technology are to a large extent related to safety. An interesting issue is the capacity to fabricate and burn mixed oxide fuels (MOX). MOX technology is essential for the destruction of fissile materials, should an agreement to that effect be negotiated. This capacity is increasing slowly.

Methods for the production of nuclear materials

24. Methods for uranium enrichment and for the production of other nuclear materials, mainly plutonium and tritium, have always been closely watched because of weapons proliferation concerns. The development of uranium enrichment techniques has not been dramatic, owing in part to the slower than expected growth of demand for nuclear power. Lasers could produce weapons-grade (highly enriched) uranium and it would also be technically possible to make reactor-grade plutonium more suitable for weapons purposes by removing some of the plutonium-240 by means of lasers. None the less, laser enrichment is still a maturing technology. The degree of advancement attained in the field of laser-isotope separation remains to be assessed. Estimates by the International Atomic Energy Agency (IAEA) suggest that lasers could provide about a quarter of the total separative work needed for reactor fuels in the early 2000s. The breeding of nuclear materials by means of accelerators has long been recognized as a theoretical possibility. This bears on proliferation problems, as accelerators are not internationally monitored like reactors.

Miscellaneous applications

25. A number of other applications of nuclear energy, nuclear particles or nuclear radiation are of interest in a disarmament and security context. One that does not seem particularly realistic is the use of radioactive substances as weapons. As ionizing radiation never kills instantly, even at very high intensities, radiological weapons (RWs) are not practical for battlefield use. The residual contamination in the area of their use would prohibit normal human activity there for many years.

26. As RWs are both militarily and ecologically quite unattractive, negotiations to prohibit them started about 20 years ago and were expected to lead to a rapid conclusion of an agreement. The proposal that such an agreement should also prohibit attacks on nuclear power plants, however, brought the negotiations to a standstill. This situation still prevails, although attacks on nuclear power plants are now banned in article 56 of the First Additional Protocol to the 1949 Geneva Conventions.

Lasers and particle beams

27. Lasers as such, or laser weapons, have a threefold relationship with nuclear-weapon technology. Lasers are regarded as possibly important components in a strategic missile defence as well as a threat to space-based assets as regards command, control, communications and intelligence ("C^3I"). The X-ray laser has been discussed as a component of a ballistic missile defence and it has been suggested that the X-ray laser should utilize an exploding nuclear device as its source of energy. As this requires the laser and the nuclear device to be built together and to be annihilated simultaneously, such an X-ray laser might be viewed as an example of advanced tailoring of a nuclear weapon. Apparently the interest in X-ray lasers as weapons has begun to fade, probably not only because of the general decrease of emphasis on space defence programmes and the current cost-benefit assessment of the whole concept.

28. As compared to X-ray laser technology, particle beam technology is much older. Science-fiction writers talked about beam weapons long before lasers were invented, as particle accelerators were being developed already in the 1930s. To be used as a weapon, a high-energy beam has to traverse large distances in the atmosphere or in space and problems associated with this propagation generate additional, severe restrictions. On the one hand, only electrically charged particles can be accelerated by electromagnetic fields. On the other, when charged particles pass through matter they rapidly lose their kinetic energy by ionizing the atoms that they hit or pass by.

29. The neutral particle beams that are the main object of current research and development use ionized hydrogen atoms. The technique as such is available in the laboratories. As far as can be understood, neutral particle beams would not be effective as weapons. It is estimated that a hundredfold increase in output over that presently available would be needed for a space weapon. This level of performance is unlikely to be attained in the next 20 to 25 years. In addition, such a powerful accelerator and its associated equipment, including the energy source, would be very large and heavy in comparison to the equipment now being tested.

30. It might be more feasible to use a neutral particle beam to discriminate between real warheads and decoys en route in space, as this would require much less energy than is needed to destroy a warhead. Laboratory experiments over short distances have indicated that this technique works in principle, but enormous practical problems remain.

Nuclear technology and verification

31. Better understanding of nuclear weapons radiations and nuclear phenomenology could assist in the development of technology for verification of treaties restricting nuclear tests. Most verification methods and procedures available so far are of a non-nuclear nature, barring those which belong to the nuclear safeguards régime. However, there is a new class of verification problems where techniques for nuclear radiation measurement have been considered, for example, to determine the presence or absence of nuclear weapons at a given location, especially on ships.

32. In principle, there are no difficulties in determining whether an unknown object is a nuclear device or not. The methods of investigation could be passive or active. Passive methods can detect, record and analyse various forms of radiation emitted from the object under investigation. Active methods comprise irradiation from different outside sources and a subsequent analysis of the emanating signals. Active investigation could involve the recording of X-ray images using transmitted or scattered X-rays. For nuclear weapon diagnosis, other forms of irradiation employing ionizing particles, neutrons or gamma rays may be more useful. But to utilize such systems would require (a) more diversified and more unwieldy equipment than passive detectors; (b) a high degree of intrusiveness in terms of time and proximity to relevant objects; and (c) a thorough knowledge of the possible consequences of an irradiation of the materials and components contained in the supposed nuclear weapon.

33. No fundamentally new principles for more sensitive detectors are within sight. Incremental improvements in existing systems are certain to continue and larger sensors might be manufactured in spite of the associated large expenditure. Background radiation, however, cannot be eliminated. For these reasons, there will always be a limit to the performance of detection systems. Also it is not possible to rule out categorically the problem of radiation shielding to impede verification.

B. Space technology*

34. Space technology is not a separate field by itself. Drawing upon a multitude of different scientific disciplines, space technology could be seen as a collection of new technologies directed towards the exploration and exploitation of the vast

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* Contributions to the present section were made by Dr. Bhupendra Jasani, Fellow, Stockholm International Peace Research Institute, London, and Dr. George Lindsey, Former Chief, Research and Development of the Department of National Defence, Canada.

region of the universe beyond the atmosphere. From the chemistry of a rocket propellant, through the mathematics of orbital calculations, to the psychology of virtual isolation in zero gravity conditions, practically every area of modern science has fed space technology.

35. Since the first satellite was placed in orbit in 1957, space capabilities have developed essentially in four areas: space transportation, sensors, spacecraft and ground segment. Many of these capabilities are unique and cannot be duplicated by airborne or ground-based systems. The data obtained from a space-based system, for example, could be 20 to 100 times more accurate, cover a much larger percentage of the Earth's surface area and be available on a 24-hour global basis under all weather conditions. A satellite system is also a passive system in the sense that the user receives data without disclosing his own location.

36. Observations from space are used routinely to survey crop, forestry and urban areas for planning purposes, oil and gas exploration and ocean research, as well as ocean reconnaissance for organizing fishing activities. Sensors have been used to observe the Earth's surface from an altitude of between 800 and 900 km for more efficient exploitation and use of natural resources. Navigation by satellites is yielding position accuracies down to a few tens of metres. Greater use is being made of the satellite-based communications and navigation systems for civilian, sea and land transport systems. The potential of increased accuracy in medium- to long-term weather forecasting through the use of orbiting spacecraft has long been recognized and it is now being put to extensive use. Ongoing improvements in remote sensing and satellites, could also yield promising returns for dealing with problems like ozone depletion, build-up of greenhouse gases, acidification of lakes and forests, large-scale deforestation and pollution of oceans.

37. Military activities in space have been devoted towards five traditional support missions: communications, reconnaissance and surveillance, navigation, meteorology and geodesy. The ease with which command and control can be exercised through satellite-based communications makes the military commanders ever more dependent on space-based systems. Remote-sensing techniques are used for tracking fleet movements, locating rear area targets, sorting out enemy lines of supply and command, monitoring activities at airbases, intercepting field communications, warning of enemy advances and so on. Satellite navigation systems provide information for updating inertial navigation systems on strategic missiles and offer highly accurate world-wide three-dimensional position-fixing. Satellites for meteorology and geodetic survey can provide data for strategic operations or tactical weather information for the battlefield commander. The quantity of data that can be obtained, when coupled to increasingly powerful computers, offers more accurate, detailed and longer-term forecasting.

38. Broadly, the current trend in space and related technologies is towards the development of more effective satellite-based sensors, more survivable spacecraft and improved command and control systems. Both incremental advances and radical improvements in any one or more of these areas could contribute towards a more efficient performance of the traditional military support missions in space. Technological advances have also opened up the possibilities for a host of future military missions in space. Among those envisaged, the following have been frequently debated. 2/

Elaboration of space-based nuclear weapons capabilities

39. These could be envisaged along four lines. First, space-based sensors might be used to seek out and directly attack an adversary's relocatable or mobile targets, that is, air defence radars, mobile missiles, mobile (even airborne) command posts and so on. A second elaboration could be a means by which to assess the damage to an opponent from an initial nuclear strike and to re-strike whatever targets survived. This could reduce targeting requirements and the size of the stockpiles required to meet them. A third possibility would be to use satellite navigation to reduce missile guidance errors to tens rather than hundreds of feet, ushering in lower-yield strategic nuclear weapons and even non-nuclear strategic weapons. A fourth use of satellite navigation could be to reduce the cost of missiles like the Midgetman that must otherwise each carry an expensive guidance system in order to have silo-killing accuracy.

Support to conventional forces

40. This is a vast category that ranges from the monitoring of rear areas to detailed participation in battlefield operations - locating targets, guiding "smart" weapons to them and relaying voice and data traffic.

Anti-satellite and satellite defense weapons

41. This category comprises all the features of a military competition in space: (a) mines, directed-energy weapons, kinetic energy weapons, jammers and electronic countermeasure pods to destroy or fool enemy satellites; (b) defensive escorts for friendly satellites, carrying jammers, decoys, shields or weapons to fight off anti-satellite weapons (ASATs); and (c) spacetracking and identification sensors for such missions and treaty monitoring.

Space-to-earth weapons

42. These types of hypothetical weapons would include beam weapons, orbiting nuclear and conventionally armed re-entry vehicles (RVs) and electromagnetic pulse (EMP) generators. Space-to-earth beam weapons have to contend with atmospheric attenuation with the abundant shielding available to terrestrial targets. Nuclear-armed RVs stored in space are not known to have competed in terms of cost, accuracy or command and control with RVs stored in the noses of intercontinental ballistic missiles (ICBMs).

43. Some of the hypothetical future technological possibilities listed above are considered either technically fanciful or as addressing issues of peripheral military concern, not to mention the prohibitive costs. In order to be effective as space-based systems, the kinetic energy and directed energy weapons, for example, must have target surveillance and acquisition systems, discrimination against decoys, pointing and tracking systems, kill assessment capability, appropriate weapons and infallible command and control arrangements. All these require new developments in technology and may offer only a limited defence against nuclear weapons. In addition, the costs of hypothetical missions remain incalculable. In this respect, a major lesson learned from man's odyssey into space is that the cost of breaking free from the Earth's gravity remains very high.

44. There are currently three major treaties in force that regulate various aspects of the use of space for military purposes:

(a) The 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water (the "Partial Test Ban Treaty") 3/ prohibits nuclear explosions such as nuclear-weapons tests in space;

(b) The 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (the "Outer Space Treaty" (General Assembly resolution 2222 (XXI), annex) bans the stationing of weapons of mass destruction in space;

(c) The 1972 Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems (the "ABM Treaty") 4/ prohibits the testing, development, and deployment of space-based ABM systems or components.

45. Although military support missions have been routinely carried out, space has not yet become a venue for weapons deployment. As of now, there are some 5,000 to 6,000 man-made objects in space. Not all of them are equally capable of performing military support missions. There are also vast differences in the degree of their technological sophistication. Considerable amounts of human, technical and financial resources are known to have been allotted for safeguarding the existing space-based assets, protecting them from being destroyed by the adversary and acquiring the technological means to destroy space-based systems. Herein lies a basic paradox of the technological dynamism of space-based military capabilities. To the extent that anti-satellite capability is suppressed, the temptation to deploy threatening spacecraft will persist in a situation of military competition in space. And to the extent that such spacecraft are deployed, there will be pressures to deploy anti-satellite weapons. 5/

46. Removal of suspicion about each other's intentions is thus in the mutual interest of military Powers with known space-based military capabilities. Several new technologies have already made it possible to use remote sensors for promoting confidence among space-based military Powers and for facilitating the conclusion of several types of arms control agreements. The central benefit of these types of systems is that, theoretically at least, they would permit the use of means of verification that can only operate effectively at close range, without compromising the integrity of weapon systems and jeopardizing military security.

47. Remote sensors could also be used to monitor agreements to establish cease-fire lines, demilitarized zones and other arrangements to control military conflicts. The use of satellites to provide information in crisis situations, to facilitate communications, to verify measures of arms limitation and to warn of imminent danger of accidents has already been accepted as peaceful uses of space-based military capabilities.

C. Materials technology*

48. Materials technology is a product and process enabling technology concerned with the intrinsic and fundamental nature of materials, their response to external stimuli and their properties and characteristics when exposed to a host of environmental conditions. In the past, man used the raw materials that nature gave to him. The new materials technology leads from the age of natural raw materials into the age of man-made raw materials.

49. Structural materials provide simply the mechanical strength or stiffness to support structures. Functional materials have special properties that take an active role in the device or applications such as electrical conduction, optical transmission or chemical separation. Conventional metals, alloys, polymers, glasses and ceramic materials do not seem to meet all the requirements of advanced industry, including its military sector. Advanced composites, that is, mixtures of two or more phases usually embedded in a matrix of a cementing material, have been developed over the last 20 years. Although it is developing at a tremendous rate, composite materials technology is a relatively immature technology, driven principally by the need to reduce weight and to increase the performance of space vehicles and civilian and military aircraft.

50. Many of the current advances in materials technology are based largely on processes that affect and generate totally new properties and characteristics rather than discovery of new materials. Examples of such processes are rapid solidification, solid state amorphization and liquid state emulsification with amorphization. A dissemination of the structures achieved through scientific advances provides few clues to the processes involved and in this sense the new materials technology is fairly safe from reverse engineering. The stealth technology, for example, uses and relies heavily upon composite materials that are derived entirely from organic materials.

51. An area of particular interest to new materials technologies is the construction of materials for both high and low temperature use. The high-energy density of emerging magnetic materials is revolutionizing the way in which electromechanical and electromagnetic equipment is being designed. The particular benefit of high-energy systems is in the ability to miniaturize components and increase overall product efficiency. Magnetostriction in rare earth-iron compounds is also being experimented upon because of the potential benefits for underwater sonar and other advanced acoustic devices.

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* Contributions to the present section were made by Dr. Ian McGill, Research Manager, Johnson Matthey Technology Centre, Reading, United Kingdom of Great Britain and Northern Ireland, and Dr. Leslie Smith, Chief of Polymers Division, National Institute of Standards and Technology, Maryland, United States of America.

52. Data storage and retrieval systems based on thin multi-layer metallic systems are also being developed. The next generation of magnetic and optical storage and retrieval media will be based upon thermo-magneto-optic technology and will require the capability to store an increasingly higher amount of information per unit area of material. Advanced weaponry, space defence and satellite communications systems requiring rapid data storage and retrieval capability will depend upon new materials-enabling technologies.

53. Military and aerospace applications are also driving the new materials technology to acquire the means for providing high temperature oxidation resistance. Indications are that some carbon composites have exhibited only minor oxidation after hundreds of hours of thermal cycling at temperatures up to 1,400°C. For future applications such as thrust vectoring exhaust components for fighter aircraft, static and rotating turbine components and thermal shielding for hypersonic tactical missiles and various re-entry carriers, oxidation resistance up to 2,100°C needs to be achieved.

54. The use of composite materials as a fuel efficient and low-weight replacement for aluminium and other metals in jet aircraft has gained some acceptance both in the commercial and military segments of the aerospace industry. When properly treated, some high-strength, lightweight plastic materials can offer twice the strength and half the weight of aluminium. Some research programmes in the aerospace industry are currently aimed at replacing airplane weight by 40 to 50 per cent, lessening acquisition costs by 20 per cent and reducing the number of parts needed in the plane by 50 per cent. Widespread economic viability and immediate strategic value of a composite jet aircraft, however, still remain to be assessed. The composite material is expensive, time-consuming to manufacture and needs to be handled in a controlled environment and refrigerated when transported.

55. Commercial developments of advanced materials are also seen as relevant for improved tank armour and anti-tank weapons. Scientists concerned with the impact of projectile hit, for example, have been intrigued by the behaviour of hand-made ceramics when struck by high-speed metal projectiles. Experiments have shown that the brittle ceramic material is pulverized by the impact but, because of the chemical change it has undergone, the fragments expand and fill the hole as it is being drilled by the tip of the moving projectile. As the very hard ceramic particles expand, they grind up the body of the projectile and thus neutralize it.

56. The developments in new materials technology alone or in conjunction with other technologies could open up several possibilities in the field of military hardware and strategic planning. 6/ Super-hardening techniques based upon new methods of materials fabrication may enhance the survivability of ICBM silo basing against a full range of nuclear effects, whether blast, thermal or electrical. Knowledge of how to harden very small, sensitive electronic components, such as radios, is only just beginning. Given the progress so far, however, at least in theoretical understanding, such techniques could be applied in land-based, sea-based, air-breathing and space-based systems. Advances in propulsion design and materials fabrication could also open up possibilities for putting cruise missiles with multiple independently targetable re-entry vehicles (MIRVs), although such a development is already prohibited by the Treaty between the United States of

America and the Union of Soviet Socialist Republic on the Limitation of Strategic Offensive Arms (SALT II) (General Assembly resolution 37/100 B). Construction of convertible warheads to deliver conventional warheads over strategic ranges could be a fairly straightforward extension of the existing knowledge of insertable nuclear components (INC). Aerodynamic systems capable of foiling prospective detection and tracking capabilities are being developed, by reducing or suppressing observable features, such as the structural characteristics of the aircraft itself. Design modifications to surface angles and engine-inlet geometry can reduce substantially the likelihood of radar detection, particularly if coupled with radar-absorptive materials.

57. Materials technology is now in a state of ferment. Many developments in new materials technology are also apparent offshoots of civilian research started, in some cases, several decades ago. Its military potentials can best be understood by recognizing that the modification of the molecular structure of materials has had an impact on military effectiveness since man discovered how to harden steel. However it is only in this century that the nature of matter has become understood in sufficient detail to tailor materials to requirements. Glass and ceramics, once synonymous with fragility, can today be stronger than steel. Strength, weight, electrical properties, melting points and all the other characteristics are now being designed, and this has enormous implications for future military equipment. Today, the nature of materials affects the lethality of weapons, the survivability of troops, the performance of aircraft, the costs of production of new systems and every aspect of every component of defence equipment. Looking for greater effectiveness from weapons, efforts may be made to seek to provide new materials that offer benefits over the old either in capability, ease of manufacture or cost. Future development in materials may also offer designs not previously possible.

58. Looking into the military implications of new technologies, materials technology seems to be a crucial area. 7/ In the construction of weapon platforms, new materials will allow aircraft to fly faster, tanks to survive attacks better, ships to stay longer at sea and submarines to range further. Reduced size for performance will reduce detectability and materials that absorb rather than reflect radars can be built into the design. Jet engines that can operate at higher temperatures produce greater efficiency and thrust. Communications will be more assured and information density greater. New computing power will become available for weapon guidance, control and information processing. New sensors will make detection of the enemy much easier by day and by night. In space, the new materials will assume yet greater importance. Indeed it has been the need to develop materials to cope with the heat of re-entry into the Earth's atmosphere that has prompted much of the research. The reduction of weight, increase in strength and increase in engine performance might eventually blur the distinction between air and space.

D. Information technology*

59. "Information" spans a wide range, including raw data, the results of its analysis, the processing involved and the knowledge acquired and used. Information technology provides fundamental tools for effectively managing and using information. The technology includes processing, storage and telecommunications capabilities configured into systems.

60. Based upon a cluster of interrelated innovations in microelectronics, computers and telecommunications, information technology is an extraordinarily pervasive technology. It underpins advances in materials, space, nuclear and biotechnologies, yet is itself dependent only on materials. All major technologies are heavily dependent on information in their research, management and control systems, to such an extent that information is sometimes singled out as being at the centre of the present wave of technological change.

61. For a technology to have pervasive effects it should: (a) generate a wide range of new products and/or services; (b) have applications in many sectors of the economy; (c) reduce the costs and improve the performance of existing processes, products and systems; (d) gain widespread social acceptance with minimal opposition; and (e) generate strong industrial interest based on perceived profitability and competitive advantage. 8/

62. On all these counts, information technology comes at the top, as is illustrated by the following table compiled for the Organisation for Economic Co-operation and Development (OECD):

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* Contributions to the present section were made by Dr. Steven Squires, Information Science and Technology Office, Defense Advanced Research Projects Agency, Virginia, United States of America, and Dr. Janet Aisbett, Principal Research Scientist, Information Technology Division, Electronics Research Laboratory, Australia.

Ranking of economic significance of several generic technologies a/

Characteristics favouring or retarding diffusion	Bio-technology	Materials	Space	Nuclear	Information
Range of new products and services	4	4	2	2	9
Improvements in costs or technical attributes of existing processes, services and products	3	4	2	1	9
Social acceptance	5	9	6	3	9
Strength of private industrial interest	3	6	3	2	10
Sectors of application	4	4	2	2	10
Probable employment impact in 1990s	2	2	1	1	10

Source: High-Level Experts Group on the Social Aspects of New Technologies, Paris, 1988.

a/ A value of 10 represents the highest ranking and a value of 1 the lowest.

63. With lead times down to two to three years, information technology is moving very fast. Physical limits were earlier foreseen to bring an end to the exponential growth of computer capability, including miniaturization and power consumption. New materials, however, have opened up new possibilities for high-temperature superconductivity and optical processing that will maintain growth rates of computing capability well into the next century. The theme right across this technology area is one of cheaper, faster, physically smaller devices handling vastly more information in many different formats and from many different sources. Software is still a weak link in the chain, so more and more of the hardware capability is being diverted to making the user's job easier, application development time faster and maintenance costs lower, with 80 per cent of software resources currently being employed in maintaining systems.

64. Described sometimes as an effective force multiplier, information technology could bring about further dramatic developments in the military sector, which has been a leading user of advanced technologies at any point in time. The military application conditions are generally more stressful because of the physical environments, the need for reliability in life-critical situations and the need for swift response in time-critical situations. As a consumer of advanced technology, the need to acquire a competitive edge over potential adversaries is stressed even more by the military than the civilian sector of industry.

65. The use of advances in information technology by the military sector could bring about significant increases in the efficiency of reconnaissance and communications, and confer greater accuracy on the performance of existing weapon systems. Technologies for military applications could include (a) greatly improved sensors of several types, capable of discriminating faint signals against cluttered backgrounds; (b) vastly improved command, control, communications and intelligence systems that could enable more flexible and tactically effective use of military forces; and (c) extremely accurate weapons, particularly anti-tank systems, capable of locating and tracking their targets autonomously. Eventually, the use of advanced computers and software systems could also permit the application of artificial intelligence to military systems. Combined with robotics, these technological developments could reduce manpower requirements per unit of combat effectiveness for at least that portion of military manpower which must be placed "in harm's way".

66. A sizeable part of the spiralling costs of weaponry and countermeasures is known to be due to information systems. Complex navigation, communication, sensor, decoy and weapon systems become increasingly integrated with more selective presentation of information, using advanced processing and graphics. System design and operator training both take advantage of more sophisticated simulators. Missile guidance systems become better equipped at identifying targets, making it possible to have increasingly "brilliant" weapons. Information technology continues to play a vital role in the modelling of new generations of weaponry, for example, modelling of detonics using supercomputers.

67. The importance of C^3I in strategic planning is well understood. What needs to be pointed out is the rapidity with which changes are occurring in the criteria for command and control as well as the standards of measurement. The new information systems are not only composed of hundreds of important components but their operational potential can be varied fundamentally by exchanging small components. As more diverse and up-to-date information becomes available, decision-making will be aided by automatic systems capable of limited reasoning about the information and its display in a digestible form.

68. At the simplest, the dependence of nations on information makes them vulnerable, either to disinformation or to direct action against communication links. Insurgents can be prepared for small-scale conflicts with cheap, hard to counter equipment by information technology, for example, reprogrammable hoppers, jammers and frequency-agile laser weaponry. Readily obtainable heat-seeking missiles can be equipped with countermeasures. Moving up the scale, crudely targeted cruise missiles could be easily constructed using GPS guidance systems from airliners, lightweight economic engines and lightweight materials for bodies. Meteorological, positional and target information is likely to become readily available from open sources.

69. The role of information technology in contributing to confidence-building and verification issues is widely recognized. Cheaper communication and cheaper, faster computation capacity are not essential for the monitoring of underground explosions, but together with more automated preliminary analysis decrease the cost of comprehensive monitoring. In so far as chemical and biological weapons

verification is assisted by analysing movements of materials and equipment, for example, for containment in electronic data bases, information technology has a role to play.

70. Given its extraordinarily pervasive and its increasingly dual nature, one cannot put too strongly how developments in all technologies and developments in industrial processing rely on information technology. If a nation falls behind in computing and communication technology, it falls behind everywhere. It cannot produce sophisticated materials, it struggles in biotechnology, it does not even consider space or nuclear power except in the role of paying customer for expensive services it cannot do without. There is a trend in all areas of endeavour to value intellectual property more highly, demonstrated by both the need to encrypt and efforts to decrypt data outside the military arena. For the developing countries without the means to acquire information, the increasing real cost of information makes it more difficult to catch up. Some of them are deeply concerned that the information technology revolution should not bypass them as the industrial revolution had done. Security lies in access to information.

E. Biotechnology*

71. Biotechnology is the utilization of living organisms and/or their constituents and products for medical, agricultural, industrial and research purposes. It encompasses a number of more or less independent though interrelated complexes of methods such as genetic engineering, protein engineering, cell technology and immune technology. Biotechnological methods provide the capability to study and to manipulate genes and other parts of genetic material, proteins, including antibodies, viruses, bacteria, cells, including germ cells and neurons, as well as multicellular organisms.

72. Currently advances in protein engineering represent the second wave of the revolution in biotechnology. The first phase was the advent of genetic engineering in the 1970s, when scientists developed methods to extract individual genes from mammalian cells and insert them into micro-organisms such as bacteria. The new technology takes genetic engineering one step further, by making changes in the amino-acid structure of the proteins themselves. Because biologists cracked the genetic code many years ago, they can write out a DNA sequence for the change they want and the cell obligingly produces the altered protein.

73. At present one of the major effects of biotechnology is in basic and applied biological research. The fundamental structures and functions of living organisms, including viruses, can be studied on the molecular level to gain knowledge about pathological processes. A majority of these insights contribute to practical consequences in health care, agriculture and environmental protection.

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* Contributions to the present section were made by Prof. Erhard Geissler, Central Institute for Molecular Biology, Academy of Sciences of the German Democratic Republic, Berlin-Buch, and Dr. Raymond Zilinskas, Associate Director, Center for Public Issues on Biotechnology of the Maryland Biotechnology Institute, University of Maryland, United States of America.

74. As in the past, current advances in biotechnology are also accompanied by some concern about possible risks and deliberate misuse. Ecological hazards caused by the release of genetically engineered organisms into the environment, genetic manipulation and human cloning, and development of biological and toxin warfare agents are among some of the persistent concerns associated with biotechnology.

75. There is, however, scant scientific evidence of the actual release of harmful organisms. In more than 15 years of research and development using genetic engineering techniques in virtually tens of thousands of laboratories, no known harm resulting from any accidental release of genetically engineered organisms has been reported. This does not entirely mitigate concerns over the deliberate misuse of biotechnology and its military potential for developing biological warfare (BW) agents.

76. The essential requirements of BW agents are believed to be consistency in effect; ease of production; stability in store; ease of dissemination; and stability after dissemination. Depending on its particular role, a BW agent will need a number of other qualities: short incubation period; appropriate persistence; difficulty of detection; and resistance to countermeasures with easy self-protection. The question of the period from delivery to the onset of incapacity is crucial. It is possible to imagine a BW agent that is slow to act but is also rapidly spread by cross-infection being used in an undeclared war. The problem would be that the forces delivering the weapon would in due course be at risk from it. 9/

77. Although biological warfare has been waged with limited and inglorious success on a few isolated occasions prior to the Second World War, there is no proven recent interest in the military utility of BW agents. These agents differ from all other combat methods by being entirely anti-personnel, that is, they can be used only for their crippling effect rather than any striking ability. Military authorities generally like to know the exact effects of the weapons they employ. The results of use of infective agents as a biological warfare weapon in human populations cannot be predicted with any degree of certainty. Morbidity and mortality from communicable disease agents cannot be accurately forecast because of differences in population groups with respect to physiological, genetic and socio-cultural variables, nutritional status, previous exposures to infective agents, immunization histories and various other factors. 10/

78. The development, stockpiling and acquisition of harmful biological agents for hostile purposes or in armed conflict are prohibited under the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction (the "Biological Weapons Convention") of 1972 (General Assembly resolution 2826 (XXVI), annex). Well over a hundred nations of the world, including the United States and the Soviet Union, are parties to the Convention. Under article I, signatory nations pledge never to produce "microbial or other biological agents, or toxins whatever their origin or method of production, of types or in quantities that have no justification for prophylactic, protective or other peaceful purposes".

79. The use of accumulated knowledge of biotechnology for deadly purposes affecting humans, animals and crops would be an ultimate perversion. It would take many years - some 10 to 15 years is the usual period - of secret research and development to obtain a new biological weapon by recombinant DNA technology, if it were successful. Effective testing in human populations would be virtually impossible. The risk of discovery of such research pertaining to man, lower animals or plants is great and, if uncovered, would undermine the credibility of a nation with respect to its signature on any treaty.

80. Biotechnology is a relatively young science with a vast potential. The developments in biotechnology, for the most part, are likely to be driven by the needs of the civilian sector. In the medical sphere this will be in the prevention and cure of disease. In the industrial field, the early work on production of fuel from sugar by fermentation points to the prospect of new fuel sources. Microbes are already being used in industrial processes to concentrate minerals, clean up pollutants and synthesize plastics. Biotechnology is also moving towards electronics and photonics in the realm of computing. Photonics offers one method of increasing chip density and computing speeds and power.

81. Beyond the obvious application of harnessing biotechnology for economic development, biotechnologies may be applied directly in arms control activities. The most promising application at this time relates to sensors. Thus, conventional, proven sensor techniques (chromatography, mass spectra, optical beams, radio-immuno assay, etc.) could be used to verify compliance with the chemical weapons convention, while biosensors and monoclonal antibodies are being developed to be the heart of ultra-sensitive and highly specific detectors useful to verify compliance to the Biological Weapons Convention and to detect and quantify pollutants in the air and water.

82. As more and more countries participate in the endeavours to revolutionize biotechnology, openness of research may provide an effective deterrent against its misuse. Steps in this direction could include publication of research findings; laboratories and research teams to enter into co-operative projects with foreign partners; continuous exchange visits between laboratory personnel; and the publication of institute and laboratory work programmes, including budgets.

IV. CONCLUDING REMARKS

83. Compared with the spectacular results of preceding decades, the current wave of technological change is mostly evolutionary and largely incremental. Furthermore, it is even more evident that much technology with military application has a dual nature. Military applications independent of civilian research are less common now than earlier when civilian spin-offs from military research were better known. In the modern weapon systems, more improvements are taking place in the field of supporting technologies than in the weapons themselves. Some of these supporting technologies are also helpful in verifying agreements on arms limitation or in other similar functions that promote peace and security.

84. The traditional mechanisms for controlling the military applications of technology are international agreements to ban, inter alia, the development, production, acquisition, deployment or use of separate categories of weapon systems. There could also be other effective means such as unilateral measures of restraint, preclusive arrangements for banning qualitative innovations clearly intended for destructive purposes and regional and subregional dialogues on military restraint and the removal of uncertainties over the intended use of technological advances.

85. Greater predictability and the removal of speculative uncertainty about technological advances can be achieved by encouraging the present trend towards more openness and greater transparency in military-related matters. Co-operative research and development practices through data exchanges and scientific visits can serve to promote technology diffusion and to reduce uncertainties about the intended use of a specific programme. There are some areas in which efforts to prevent dangerous technological advances must be employed at the research and development stage, as in the case of biological weapons. In other cases, it is only at the production stage of the process that it can be determined whether technology is being used for military or civilian purposes, as in the case of chemical weapons. Within the limits set by proprietary claims on patents, inter-co-operative research and development endeavours also provide a framework for promoting ethical responsibility among scientists.

86. In order to develop a realistic set of criteria for technology assessment, the international community needs to be better equipped to follow the nature and direction of technological change. Recognizing that there are already a number of institutions involved in devising and implementing adequate mechanisms for technology assessment, the United Nations can serve as a catalyst and a clearing-house of ideas. Among suggestions already made are several that aim at examining whether new technologies call into question the existing international agreements on arms limitation or the tacit understandings crucial for their adherence. An illustrative framework for assessment of "new technologies" could include such criteria as:

(a) Will they offer new military options either by significantly improving known weapons or by creating new weapons systems?

(b) What will be their impact on crisis management in peace and during conflict?

(c) Will they promote better means of verification or weapons disposal?

(d) Will they create a new set of issues for ongoing negotiations?

87. These and similar questions represent the dimensions of new challenges that must be addressed if the international community is to find ways of allowing technology the freedom to develop and yet, at the same time, ensure that technological advances promote rather than place at risk international peace and security in the years ahead.

Notes

1/ The United Nations Disarmament Yearbook, vol. 12: 1987 (United Nations publication, Sales No. E.88.IX.2), appendix VII.

2/ Joseph S. Nye, Jr. and James A. Schears, eds., Seeking Stability in Space: Anti-Satellite Weapons and the Evolving Régime, Aspen Strategy Group and University Press of America, Boston Way, Maryland, 1987, chap. II.

3/ United Nations, Treaty Series, vol. 480, No. 6964.

4/ Ibid., vol. 944, No. 13446.

5/ Nye and Schears, op. cit., p. 97.

6/ "Deterrence, Technology and Strategic Arms Control", in Adelphi Papers No. 215, The International Institute for Strategic Studies, London, winter 1986-1987, pp. 9-13.

7/ Timothy Garden, The Technology Trap: Science and the Military, Brassey's Defence Publishers, London, 1989, pp. 83-88.

8/ New Technologies in the 1990s: A Socio-economic Strategy, OECD, Paris, 1988, pp. 35-37.

9/ Garden, op. cit., pp. 89-93.

10/ Susan Wright and Robert L. Sinsheimer, "Recombinant DNA and biological warfare", in Bulletin of the Atomic Scientists, vol. 39, No. 9, November 1983; and Martin M. Kaplan, "Another view", in Bulletin of Atomic Scientists, vol. 39, No. 9, November 1983.

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IMPLEMENTATION OF THE DECLARATION ON THE DENUCLEARIZATION OF AFRICA

Nuclear capability of South Africa

Report of the Secretary-General

1. On 15 December 1989, the General Assembly adopted resolution 44/113 B, the operative part of which reads as follows:

"The General Assembly,

"...

"1. Takes note of the report of the Secretary-General on South Africa's nuclear capability;

"2. Condemns the massive build-up of South Africa's military machine, in particular its frenzied acquisition of nuclear-weapon capability for repressive and aggressive purposes and as an instrument of blackmail;

"3. Also condemns all forms of nuclear collaboration by any State, corporation, institution or individual with the racist régime of South Africa, in particular the decision by some Member States to grant licences to several corporations in their territories to provide equipment and technical and maintenance services for nuclear installations in South Africa;

"4. Takes note with great concern of recent reports that collaboration between Israel and South Africa has resulted in the development by South Africa of a nuclear-tipped missile;

"5. Calls upon the Secretary-General, with the assistance of a group of qualified experts, to investigate those reports, bearing in mind their implications for the implementation of the policy of denuclearization of Africa and for the security of African States and, in particular, the front-line and other neighbouring States;

"6. Requests the Secretary-General to submit a preliminary report on his investigation to the Disarmament Commission at its substantive session in 1990 and a final report to the General Assembly at its forty-fifth session;

"7. Reaffirms that the acquisition of nuclear-weapon capability by the racist régime constitutes a very grave danger to international peace and security, and in particular jeopardizes the security of African States and increases the danger of the proliferation of nuclear weapons;

"8. Expresses its full support for the African States faced with the danger of South Africa's nuclear capability;

"9. Commends the actions of those Governments which have taken measures to restrict co-operation with South Africa in nuclear and other fields;

"10. Demands that South Africa and all other foreign interests put an immediate end to the exploration for and the exploitation of uranium resources in Namibia;

"11. Calls upon all States, corporations, institutions and individuals to terminate forthwith all forms of military and nuclear collaboration with the racist régime;

"12. Requests the Disarmament Commission to consider once again as a matter of priority during its substantive session in 1990 South Africa's nuclear capability, taking into account, inter alia, the findings of the report of the United Nations Institute for Disarmament Research on South Africa's nuclear capability;

"13. Requests the Secretary-General to provide all necessary assistance that the Organization of African Unity may seek regarding the modalities and elements for the preparation and implementation of the relevant convention or treaty on the denuclearization of Africa;

"14. Commends the adoption by the Security Council of resolutions 558 (1984) of 13 December 1984 and 591 (1986) of 28 November 1986 on the question of South Africa, with a view to blocking the existing loopholes in the arms embargo so as to render it more effective and to prohibiting, in particular, all forms of co-operation and collaboration with the racist régime of South Africa in the nuclear field;

"15. Demands once again that South Africa submit forthwith all its nuclear installations and facilities to inspection by the International Atomic Energy Agency;

"16. Requests the Secretary-General to follow very closely South Africa's evolution in the nuclear field and to report thereon to the General Assembly at its forty-fifth session;

"17. Also requests the Secretary-General to report to the General Assembly at its forty-fifth session on the military assistance that apartheid South Africa is receiving from Israel and any other sources in advanced missile technology as well as the supporting technical facilities."

2. Pursuant to paragraph 16 of the resolution, the Secretary-General has continued to follow very closely South Africa's evolution in the nuclear field. In order to obtain information that would be of assistance in the preparation of his report he has, inter alia, been in contact with the International Atomic Energy Agency and the Organization of African Unity.

3. In response to the inquiry of the Secretary-General, the Director General of the International Atomic Energy Agency has informed him that, at its thirty-fourth regular session, which was held from 17 to 21 September 1990, the General Conference of the Agency adopted a resolution concerning South Africa's nuclear capabilities (GC(XXXIV)RES/545), which is submitted herewith (see annex).

4. Should the Secretary-General receive any further information on the subject, he will bring it to the attention of the General Assembly without delay.

ANNEX

Resolution on South Africa's nuclear capabilities adopted by the General Conference of the International Atomic Energy Agency at its 332nd plenary meeting, on 21 September 1990

(GC(XXXIV)/RES/545)

The General Conference,

(a) Recalling the recommendation of the Board of Governors to suspend South Africa from the exercise of the privileges and rights of membership of the Agency as contained in its report GC(XXXI)/807 pursuant to General Conference resolution GC(XXX)/RES/468,

(b) Stressing that, despite the requests of the General Conference and the international community, South Africa has persistently violated international law as well as the purposes and principles of the United Nations, upon which the Agency's activities are based in accordance with Articles III.B.1 and IV.B of the Statute,

(c) Also stressing that the acquisition of a nuclear-weapons capability by the racist régime of South Africa constitutes a very grave danger to international peace and security, and in particular jeopardizes the security of African States and increases the danger of the proliferation of nuclear weapons, and

(d) Equally recalling the resolve of the General Conference to take a decision on the suspension of South Africa expressed in General Conference resolution GC(XXXIII)/RES/524 in accordance with Article XIX.B of the Statute,

1. Deplores South Africa's non-compliance with successive resolutions of the United Nations General Assembly and the General Conference of the IAEA, as well as its non-adherence to the principles and purposes of the United Nations Charter and the Statute of the Agency;

2. Resolves to consider and take a decision on the recommendation of the Board of Governors contained in its report GC(XXXI)/807 to suspend South Africa from the exercise of the privileges and rights of membership of the Agency in accordance with Article XIX.B of the Statute at the Conference's thirty-fifth regular session;

3. Requests the Director General to continue to take all possible measures to ensure the full implementation of resolution GC(XXX)/RES/468 and to report to the General Conference at its thirty-fifth regular session in this regard;

4. Further requests the Director General to bring this resolution to the attention of the Secretary-General of the United Nations; and

5. Decides to include in the agenda for its thirty-fifth regular session an item entitled "South Africa's nuclear capabilities".

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FINANCIAL REPORTS AND AUDITED FINANCIAL STATEMENTS AND REPORTS OF THE BOARD OF AUDITORS

Report of the Advisory Committee on Administrative and Budgetary Questions

1. The Advisory Committee on Administrative and Budgetary Questions met with the Board of Auditors as well as with the Audit Operations Committee in September 1990 and discussed with them the Board's reports to the General Assembly on the financial accounts of the United Nations, 1/ including the International Trade Centre, 2/ and the United Nations University, 3/ for the biennium ended 31 December 1989; the United Nations Children's Fund (UNICEF), 4/ the United Nations Development Programme (UNDP), 5/ the United Nations Population Fund (UNFPA), 6/ the voluntary funds administered by the United Nations High Commissioner for Refugees (UNHCR), 7/ the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), 8/ the United Nations Institute for Training and Research (UNITAR), 9/ all for the year ended 31 December 1989; as well as the United Nations Environment Programme (UNEP), 10/ and the United Nations Habitat and Human Settlements Foundation 11/ for the biennium ended 31 December 1989. The Advisory Committee's observations and comments on the report of the Board of Auditors on the accounts of the United Nations Joint Staff Pension Fund 12/ for the year ended 31 December 1989 will be submitted separately to the General Assembly at its forty-fifth session in a report that will also include the Committee's recommendations on the report of the United Nations Joint Staff Pension Board. 12/

2. The Advisory Committee also had before it a note by the Secretary-General (A/45/457), transmitting the summary of principal findings and conclusions for remedial action contained in the reports of the Board of Auditors, which was prepared by the Board in accordance with General Assembly resolution 44/183 of 19 December 1989. For its part, in making its comments and recommendations, the Advisory Committee relied upon the main reports of the Board of Auditors.

3. The Committee also took note of reports by the Secretary-General, the Administrator of UNDP and the Executive Director of UNICEF on the implementation of the recommendations of the Board of Auditors, (A/45/509; DP/1990/76; and E/ICEF/1990/AB/L.14).

The Panel of External Auditors

4. Prior to its consideration of the reports of the Board of Auditors, the Advisory Committee met with representatives of the Panel of External Auditors to discuss issues which, in the opinion of the Panel, should be brought to the attention of the Advisory Committee.

5. The topics discussed at the meeting were:

(a) Development of generally accepted accounting principles to be applied by United Nations organizations;

(b) Development of a fraud awareness programme;

(c) Security of computer systems;

(d) Full disclosure, by reserve or by note in financial statements of United Nations organizations, of the liability existing in connection with termination benefits;

(e) Arrears of assessments of Member States.

6. The Committee noted the concerns of the Panel with regard to the development of a fraud awareness programme and security of computer systems; it intends to remain seized of these questions and will follow up on them as necessary. With regard to the other three topics, the comments of the Committee are presented in the paragraphs below.

7. With regard to generally accepted accounting principles, the Committee was informed by representatives of the Panel that there is a need to develop appropriate accounting principles and standards for consistent application in the United Nations system. According to the Panel, recognition would be given to any significant differences in the circumstances of the individual organizations concerned.

8. The Committee was informed that there are many reasons why standards developed specifically for businesses and commercial accounting cannot be applied directly in the different circumstances of the United Nations. The existing commercial standards are based on a fundamental principle of full accrual accounting, whereas United Nations accounting is a mixture of receipts and payments and income and expenditure and covers significantly different types of activities. More generally, the aims and objectives of the United Nations, the appropriate disclosure requirements, and the interests and needs of the organization preparing the financial statements and of the various users of the final accounts are in many respects significantly different from those of commercial bodies.

9. The Advisory Committee shares the concern of the Panel in this subject. The Committee recommends that the General Assembly request the Panel of External Auditors to commission a study, perhaps utilizing the services of the International Accounting Standards Committee. Results of the study should be submitted to the Advisory Committee.

10. In the opinion of the Advisory Committee, the subjects of arrears of assessments of Member States and of full disclosure of termination benefits as a contingent liability are closely related to the question of formulating generally accepted accounting principles in the United Nations system. What constitutes a contingent liability and how it should be disclosed and the treatment of arrears of assessments are issues that must take into account the special legal status and requirements of individual international organizations. Furthermore, the question of arrears will have to be viewed in the context of the provisions of the relevant financial regulations and statutes of the organizations concerned. The Committee trusts that these issues will be addressed in the special study recommended above.

United Nations

11. Various aspects of budgetary control are discussed by the Board of Auditors in paragraphs 45 to 70 of its report. 1/ In paragraphs 47 to 52, the Board considers the question of expenditures exceeding appropriations and observes that it had become customary for the Administration to seek transfers between sections. The Board's observations are indicative of the need to improve the control procedures. As pointed out by the Board, the transfers between sections of the 1988-1989 budget were approved by the Advisory Committee. However, the Administration needs to explain much more clearly the reasons for the excesses and transfers between the different items of expenditure; moreover, those factors which contributed to the increases or decreases in the various sections of the budget, should be borne in mind by the Administration when it formulates future budgets.

12. The Advisory Committee notes the Board's views regarding expenditures in excess of allotments, excessive obligation of allotments and unrecorded allotment advices (paras. 54 to 62). The Advisory Committee recalls the comments it made to the General Assembly that "widespread exceeding of the allotments could point to the need for correction, either in the size of the allotments themselves or in procedures for authorizing commitments" (A/44/543, para. 16).

13. Financial regulation 4.4 provides that obligations of prior periods which remain valid but which cannot be liquidated within the one year extension period should be transfered as a charge against current appropriations. The implementation of this regulation is commented on in paragraphs 63 to 67 and the Administration's response is in paragraph 65 of the Board's report. The Advisory Committee believes that a solution to the problem created by the new budgetary process would be for the Administration to submit to the General Assembly an appropriate amendment to financial regulation 4.4.

14. The Advisory Committee observes that there are serious lapses reported by the Board regarding the administration and management of personnel. Not only have

serious flaws been pointed out with respect to the interpretation of policies and procedures but also with regard to the enforcement of regulations and rules.

15. In paragraphs 100 to 106 of its report, the Board cites the example of a staff member who was promoted with the intention of establishing a basis for an early retirement. The Board believes that the action taken was not appropriate nor does it see an advantage in using the agreed termination procedure in this case. It also believes that such actions could be detrimental to the morale of other staff members. The Advisory Committee agrees with the views of the Board; such abuses should not be repeated in future.

16. As indicated in paragraphs 111 to 119 of the Board's report, the practice of overtime payments in the Security and Safety Service resulted in an additional cash outlay of $10,212 for a period of three months. In this connection, the Advisory Committee draws attention to the comments and recommendations that it made in its report on section 28D of the proposed programme budget for the biennium 1990-1991. 13/ The Board's examination reveals that when a security officer's regular day off falls on a United Nations holiday, a claim for overtime payment is made for reporting for scheduled work one or two days immediately following the holiday. The Advisory Committee recommends that this practice be discontinued immediately and requests that the Board of Auditors follow up the implementation of this recommendation.

17. The Advisory Committee notes from paragraph 121 of the Board's report that the Administration was committed to implementing software improvements that would reduce the problem of excessive overtime in the Telex Unit of the United Nations Office at Vienna. The Committee welcomes the Board's intention to follow up on the matter. The Committee intends to follow up this question in the context of the 1992-1993 programme budget.

18. A number of weaknesses are revealed in the Board's report with regard to procurement of supplies and non-expendable property (paras. 140 to 149). For example, it appears that bidding for procurement of goods has become the exception rather than the rule. The Advisory Committee agrees with the recommendation of the Board that the Financial Rules in this respect be adhered to. However, the Committee also notes that the Administration is "exploring the possibility of issuing bids through a computerized system, thereby enabling formal bidding to be used in a great number of cases without requiring additional resources" (para. 147).

19. Programme planning and monitoring are issues dealt with by the Board in paragraphs 150 to 161. The Advisory Committee notes the statement of the Administration that it is not always possible to define output accurately, nor can certain activities be easily translated into quantifiable output in the programme performance report. The Committee further notes that, in the view of the Administration, the costing of output involves a number of technical problems. The Advisory Committee agrees with the Administration and believes that the costing of output should be seen as the ultimate goal once technical and other problems have been resolved. The Committee trusts that adequate account of these factors will be taken by the Auditors in their examination of the application of the regulations

and rules governing programme aspects of the budget, the monitoring of implementation and the methods of evaluation.

20. Technical co-operation and project activities are discussed in paragraphs 162 to 170 of the Auditor's report. The Advisory Committee shares the Board's views regarding timely and effective implementation of technical projects. The Committee notes the views of the Administration that effective delivery of projects "can only be successfully carried out if there is full co-operation from the recipient Government in responding to executing agencies' requests for approval of the various procurement and appointment actions in order to ensure delivery within the time-frames envisaged in a project document" (para. 166).

21. With regard to paragraphs 178 and 179, the Advisory Committee agrees with the Board's observation that all regional commissions should be asked to undertake a revision of rental and operating costs charged to the specialized agencies and other entities.

22. For reasons given in paragraph 191 of its report, the Board believes that the cost-sharing ratios for common services should be reassessed. The Board was informed that the United Nations Office at Geneva is prepared to propose a review in pending negotiations among that Office, the United Nations Industrial Development Organization and the International Atomic Energy Agency. The Advisory Committee welcomes the comments of the Board in this regard; for its part, it intends to follow up this issue in the context of the Committee's examination of the 1992-1993 programme budget.

23. The Advisory Committee emphasizes the need for a speedy and substantial strengthening of administrative and budgetary functions and structures of the United Nations Office at Vienna, especially in view of the expressed wish of the General Assembly for an overall strengthening of that Office. The Committee therefore recommends that specific proposals on the most immediate measures in this regard that would, in particular, allow an expeditious in-depth review of common services, including conference services, at the Vienna International Centre, be prepared by the Secretary-General and presented to the General Assembly at its forty-fifth session. The overall proposals of the Secretary-General on how to strengthen the United Nations Office at Vienna would be considered by the General Assembly in the context of the proposed programme budget for 1992-1993.

24. In response to General Assembly resolution 44/183, information on the liquidity position of the United Nations is provided in paragraph 193 of the Auditor's report. Liquidity information on the other agencies and programmes is provided in each of the Board's reports. The Advisory Committee observes that the information in each of the audited reports is presented in a different format and, in many cases, does not reflect the actual liquidity position. The Committee requests that, in future reports, the Board of Auditors provide this information in a standardized format for all audited United Nations entities.

25. In this connection, the Advisory Committee has been informed that the table provided in paragraph 193 of the Board's report has been amended and that the relevant information has been issued in a corrigendum to the Board's report. The

Committee considers the table contained in the corrigendum to be an improvement. Nevertheless, problems persist. For example, the amended table still does not adequately reflect that, in the United Nations, all fund accounts have to be viewed separately; a surplus in one fund account is not available to offset a deficit in another.

26. Under the general title of "cases of fraud and presumptive fraud in 1988-1989" the Board examines cases pertaining to tax reimbursements made to United Nations staff members during 1983-1984 (paras. 200-202). The Committee notes from the Board's report that, of a total of 139 cases, there was a satisfactory explanation for 23; for 55 others, the amounts involved were fully recovered, while 61 cases were under review. Those 61 cases involved a total amount of $130,675 of which $87,901 had been recovered. The Committee trusts that the Administration will take the necessary action for recovery of the balance [amount].

United Nations Development Programme

27. The Advisory Committee notes that, as indicated in paragraph 65 of its report on UNDP, 5/ the Board of Auditors has withdrawn its qualification on the 1988 financial statements relating to accounting for cash-counterpart contributions. Nevertheless, the Committee notes with concern that, in paragraphs 58 and 59 of its report on the question of programme expenditure incurred by United Nations executing agencies, the Board was unable to express an unqualified opinion, as the required information was not made available on time. The Advisory Committee recalls that the Board has qualified its opinion in this regard since 1986. The Committee trusts that the new procedure of biennial auditing will address and rectify this situation.

28. The audit of government-executed programme expenditure is discussed by the Board in paragraph 60 of its report. The Advisory Committee recalls that this matter has also been the subject of discussion for a number of years and notes that, although some efforts were made, timely receipt of information on government-executed projects was available for only 161 projects, relating to expenditure of $22.8 million, as compared to a total of $100.1 million. The Advisory Committee agrees with the Board's view that, although this represents a major improvement as compared to prior years, "the coverage of approximately 23 per cent of expenditure still presents a limitation for the expression of an unqualified opinion". The Committee considers this to be serious weakness that the Administration should address vigorously, in particular, because of the trend for greater involvement by Governments in project execution.

29. The Advisory Committee welcomes the fact that new procedures on accounting for government-executed programme expenditure were introduced by UNDP in 1989 (para. 61). However, the Committee agrees with the Board's opinion that, although "substantial progress was made in 1989 on the return of the Governments' disbursement reports, further improvement is still needed in the timely reporting by Governments to assess finally the outstanding balance of advances to Governments" (para. 64).

30. In paragraphs 75 and 76 of its report, the Board discusses the question of operating funds provided to Governments and the deficiencies in the process with regard to Governments providing UNDP with the relevant documentation on time. The Advisory Committee is of the opinion that many of the problems related to the question of advances and operating funds provided to Governments and the executing and accounting of projects against such funds will have to be actively pursued by the Administrations of UNDP, UNFPA and UNICEF (see paras. 43 and 46 below).

31. A number of issues regarding generally accepted acccounting principles are discussed by the Board in its report, including assets and investments (paras. 66 to 72), cash and investment management (para. 117), and contingent liability (para. 97). The Advisory Committee's comments on generally accepted accounting principles are reflected in paragraphs 4 to 10 above. Issues related to generally accepted accounting principles are also discussed with regard to a number of other reports of the Board (see para. 42 below).

32. The Advisory Committee recalls that it had requested the Board of Auditors to examine the nature and extent of possible abuses in the recording of unliquidated obligations (A/44/543, para. 11) and notes the Board's findings (paras. 85 to 94). The Committee also notes that, following the Board's previous observations and in line with the policy of increased decentralization, the Administration has issued stricter guidelines on the recording of obligations with the purpose of minimizing the problems and ensuring compliance with UNDP Financial Rules (para. 92).

33. The Board of Auditors was requested by the Governing Council of UNDP, in decision 89/61, to review the newly implemented procedure with regard to the concept of a two-year project cycle introduced by UNDP in July 1987. The Advisory Committee notes that, although the Board has reviewed the issue (paras. 109 to 113), it is perhaps too early to draw any firm conclusions from the experiment and requests the Board to keep the matter under review.

34. From paragraph 53 of the Board's report the Advisory Committee notes the Board's continuing concern regarding project-funded posts at UNDP headquarters. The Committee shares the Board's concern in this regard and recalls that this matter has been the subject of previous discussion and recommendations by the Board. The Committee reiterates its view that project-funded posts at headquarters should be kept to a minimum, if not altogether eliminated. In this connection, the Committee refers to paragraphs 5 and 39 of its own report (A/44/543), wherein the Committee recommended strict compliance with UNDP Governing Council decision 86/35 which required full disclosure in the budget document of all project posts at headquarters. The Advisory Committee intends to pursue this issue in the context of its examination of the UNDP budget.

35. The Advisory Committee is in agreement with the Board's view that, "by charging costs for temporary assistance to the budget line for established posts, these costs are not revealed to the extent that they are actually incurred" and that "the Administration is therefore in a position to allocate more resources to temporary assistance than is allowed for in the approved budget" (para. 116). The Committee endorses the Board's recommendation that temporary assistance costs should be represented as such in the budget as well as in the financial statements.

36. In paragraphs 164 to 174 of its report, the Board discusses the use of Special Service Agreements and the hiring of consultants. In the opinion of the Advisory Committee, the Board's comments reveal a practice of issuing Special Service Agreements in a manner that is tantamount to evading prescribed procedures. The Committee believes that, in this case, consultants are used to provide added staff services rather than special expertise. The Committee notes the Board's observation that "only a small part (about 5 per cent of all temporary staff is hired as recognized experts providing advice and opinion, whereas about the same percentage will provide professional services such as project implementation and internal assistance of some kind, thereby carrying out tasks of staff members" (para. 173). The Committee is not satisfied with the Administration's reply contained in paragraph 172 of the report.

37. In paragraphs 120 to 132 of its report, the Board deals with trust funds and sub-trust funds. The Advisory Committee notes that UNDP manages a total of 62 trust funds and 51 sub-trust funds of which, in 1989 alone, 19 were established in the former category and 9 in the latter. Such an increase implies an increase in administrative work-load. The Advisory Committee recommends that a mechanism be established to ensure that administration and management of trust funds does not become too complex and costly; moreover, an appropriate reimbursement should be made from these funds to cover the increase in administrative work-load, i.e. all the funds should be charged a fair share of the cost of administration and management.

38. The question of personal responsibility and financial liability of UNDP officials is discussed in paragraphs 137 to 152 of the report. In this connection, the Board is of the opinion that it is important to address all staff members, illustrating to them the practical demands and repercussions of financial rule 103.2 (which corresponds to financial rule 114.1 of the United Nations) in a clearer manner. Simply to repeat the provisions in another circular is not deemed sufficient by the Board. The Advisory Committee agrees with the Board.

39. In paragraphs 153 to 157 of the report, the Board of Auditors comments on a number of flaws in the functional title system within UNDP. The Board points out that there are more than 1,300 functional titles for Professional and L-level staff and that titles no longer bear a direct relation to grades. In addition, the Board observes that for various reasons the number of titles for General Service staff has also been unnecessarily inflated. The Advisory Committee notes that for both categories of staff the Administration has agreed with the findings and will be reviewing the situation. The Committee would like to be kept abreast of developments in this regard.

United Nations Population Fund

40. In paragraphs 41 to 49 of its report on UNFPA, 6/ the Board discusses the question of programme expenditure. As in the case of UNDP, the Board continues to qualify its audit opinion on programme expenditure incurred by agencies because, at the time of audit, "less than 30 per cent of the expenditure incurred by United Nations executing agencies are adequately supported by audited documentation"

(para. 45). The Committee trusts that the Administration will expedite corrective action, as indicated in paragraph 49 of the Board's report.

41. A serious problem has also been revealed with respect to accounting, auditing and reporting requirements and procedures regarding programme expenditure executed by intergovernmental institutions and other agencies (paras. 50 to 54). The Advisory Committee agrees with the observations of the Board that, until new guidelines are drafted for such institutions, existing policies have to be strictly followed.

42. A number of issues related to generally accepted accounting principles are discussed by the Board in its report including exchange gains and losses (paras. 35 to 39), unliquidated obligations of executing agencies (paras. 72 and 73), contingent liabilities (paras. 74 and 75) and cash and investment management (paras. 87 to 89). The Advisory Committee's views on these issues are contained in paragraphs 4 to 10 above.

43. Operating funds provided to Governments are discussed in paragraphs 59 to 65 of the Board's report. The Board indicates that, although advances amounting to $13.25 million had been made by UNFPA for about 200 projects during 1989, details of expenditure covering that period had been submitted for only a few of the 200 projects. The Board recommends in paragraph 64 (a) of its report that "advances may be withheld from the project if satisfactory documentation of the expenditure incurred and status of funds reports are not received at the required dates". The Advisory Committee endorses that recommendation. However, the Committee does not agree with the Board's recommendation, contained in paragraph 64 (b), that interest should be paid by Governments on that portion of the funds advanced which has not been used as programme expenditure.

44. In paragraphs 76 and 77 of its report, the Board cites financial regulation 5.2, which provides that trust funds shall be accepted only on a fully funded basis. However, the financial statements of UNFPA show a debit balance of $235,088 at the end of 1988 in this respect. The Advisory Committee endorses the Board's view that no expenditure should be incurred or committed until funds to cover that expenditure have been received.

45. In paragraphs 108 to 123, the Board reports on two UNFPA meetings that were charged as "projects". In addition, the audit revealed a number of inconsistencies, including the fact that most of the travel expenses for the meetings were charged to project expenditure. The Advisory Committee agrees with the Board that, by calling the two meetings "projects", the definition of "project" has been stretched too far. In the opinion of the Advisory Committee the cost of the meetings is the type of expenditure that should be included in the administrative and programme support services (APSS) budget.

United Nations Children's Fund

46. The Advisory Committee notes with concern the situation regarding the liquidation of cash advances to Governments (paras. 28 to 31 of the Auditor's report 4/). The Board of Auditors reports that in 1989 about 35 per cent of the

returns were not submitted by field offices to UNICEF headquarters. Furthermore, the Board's audit revealed that UNICEF continued to release funds to Governments in cases where previous advances had not been accounted for, whereas the UNICEF policies and procedures manual requires that advances to Governments should be liquidated within a period of six months. In addition, in UNICEF Financial Circular No. 15 it is stated that no further transfer of funds to Governments may be made if a certificate of use of prior financing is outstanding for more than six months. The Advisory Committee recommends that the provisions of Financial Circular No. 15 be adhered to without exception.

47. In paragraphs 37 to 40 of its report, the Board discusses the liquidity position of UNICEF, in particular, the question of excess liquidity. The Administration's response (para. 41) is not fully satisfactory to the Advisory Committee; too high a liquidity ratio may call into question the agency's efficiency in programme delivery.

48. Programme delivery is discussed in paragraphs 52 to 56 of the report. The Advisory Committee considers the Administration's response to be inadequate and believes that the Administration should increase efforts to correct the situation regarding programme delivery, in particular, to low income countries.

49. Paragraph 59 deals with expenditures in excess of commitments on supplementary-funded projects. The Advisory Committee notes that the position of the Administration as described in paragraph 59 is not realistic. The Committee agrees with the view of the Board that "the planning and implementation of programme activity need further improvement so that over-expenditures, which will necessarily have to be absorbed by general resources in the absence of supplementary funding, could either be eliminated or kept to a minimum" (para. 60).

50. In paragraphs 68 to 70 of its report, the Board reveals that there was inadequate information on paid contributions and that there was an increasing number of unidentified funds. The Advisory Committee believes that proper mechanisms should be devised and implemented to ascertain the magnitude and nature of funds received.

51. In paragraphs 77 to 80 of its report, the Board reports on the question of utilization of experts and consultants and contracting for services that could be peformed by regular staff. The Advisory Committee's views on the subject are contained in paragraph 36 above.

52. The Advisory Committee notes the Board's observation that, "outside the original plan of operations, UNICEF expended an amount of $1.3 million on a construction project, including housing for the project staff of a national Government" (para. 97). The Board is of the view that the mandate of UNICEF binds it to assist in programmes that would directly benefit children and women' and that "UNICEF [should] refrain from contracting huge projects that might overburden its financial resources where counterpart contributions might not be forthcoming" (para. 98). The Advisory Committee agrees and recommends that UNICEF try to obtain recovery of costs incurred for the buildings.

United Nations High Commissioner for Refugees

53. The Advisory Committee notes from schedule 1 of the UNHCR financial statements for the year ended 31 December 1989 7/ that an amount of $108,699,071 has been listed as "other trust funds". The Committee was informed by the representatives of the High Commissioner that those funds are not trust funds in the traditional sense of the word as used in the United Nations but, rather, are special programme funds. As such, the Committee recommends that, in future, UNHCR use other terminology to describe those resources.

54. As indicated in paragraph 24 of its report, the Board's examination revealed that, of the total year-end paid cash contributions, approximately 30 per cent represented cash channelled through UNHCR to refugee programmes carried out by third parties and governed only by an exchange of letters between donor and UNHCR. The Committee recommends that, in future, such funds given to the organization be clearly identified and the purposes thereof be stated. The Advisory Committee agrees with the Board's view that, not only should the purposes for transfer of the funds between donor and recipient through UNHCR be clearly reflected in the financial documentation, but that UNHCR should also ascertain that the purposes for which these transfers are made are consistent with the policies and objectives of UNHCR.

55. The Advisory Committee notes that the Board has called for a review of the policy governing the rotation of staff (para. 47). In view of the current difficult financial position of the organization, the Advisory Committee endorses the Board's recommendations on the subject. The Committee has also commented on this matter in the context of its report on the proposed programmes and budget of UNHCR for 1990.

56. In paragraphs 49 to 52 of its report, the Board discusses the problem of executing agencies' incurring expenditures in excess of funds. The Advisory Committee believes the recommendations of the Board of Auditors to be timely in this regard, particularly in view of the financial position of UNHCR and the overall budgetary control that needs to be exercised. The Committee endorses the Board's view that established procedures, as contained in the UNHCR manual and implementing instructions, be followed in order to ensure that UNHCR funds are disbursed in accordance with its rules and regulations.

57. In paragraphs 53 to 57 of its report, the Board discusses the question of pledges and contributions. The Advisory Committee endorses the Board's recommendation that the reporting and payment procedures be streamlined in order to obtain expeditious reimbursement from donors for food purchases and related costs (para. 56).

58. Under a memorandum of understanding between the World Food Programme (WFP) and UNHCR, when WFP provides food aid through UNHCR, the latter may claim internal transportation, storage and handling costs incurred. The Advisory Committee notes from paragraphs 58 and 59 of the Board's report that, owing to cumbersome procedures and lack of budgetary controls, there is no adequate co-ordinated internal transportation, storage and handling information on outstanding claims.

As such, the Advisory Committee believes that the recommendations of the Board contained in paragraph 60 are both timely and appropriate.

59. The Committee notes the Board's observation (para. 64) that "agreements entered into with implementing agencies did not always include a provision for the submission of certified audited accounts, nor was the provision adequately enforced". The Advisory Committee recommends that appropriate steps be taken to rectify the situation.

60. The Board reports that failure by field offices to report missing property items promptly to Headquarters persisted (para. 73). The total value of the missing items, which included three vehicles, has been reported as $61,627. The Advisory Committee shares the Board's concern in this regard, particularly in view of the Administration's response that, in relation to the total value of UNHCR property items (approximately $27 million), the loss of a vehicle was not significant (para. 76).

United Nations Relief and Works Agency for Palestine Refugees in the Near East

61. The Advisory Committee notes from paragraph 28 of the Auditors' report on UNRWA, 8/ that, with regard to the question of unliquidated obligations, UNRWA introduced a new system in 1989, in line with the Board's previous recommendations. In the Board's view, as reflected in paragraph 29, "the Agency's operations, its funding and purpose differ from those of commercial enterprises" and, therefore "specific requirements arising from the Agency's operations might justify a modification of those principles which were established for commercial enterprises". The Advisory Committee agrees with the Board. (See also paras. 4 to 10 above).

62. The results of an in-depth examination of the Area Staff Provident Fund are contained in paragraphs 93 to 138 of the Board's report. The Advisory Committee recalls that certain weaknesses in the Fund's management were revealed in previous audit reports by the Board and, in its report to the General Assembly (A/44/543) the Advisory Committee called for quick and immediate remedial action to correct this situation.

63. The Committee understands that the present mechanism for the management of the Fund was established when the Fund was much smaller. Even in the relatively short period since 1986, the Fund's assets have grown from $341 million to $500 million in 1989 and are estimated at approximately $550 million in 1990. As such, with the substantial increases in its assets, the operation of the Fund needs to be considered with a view to maximizing returns on its investments as well as ensuring the most efficient management.

64. The Advisory Committee had the opportunity of meeting with the representatives of the Commissioner-General of UNRWA and held extensive discussions on various issues with regard to UNRWA, in particular, the Area Staff Provident Fund. During the course of those discussions, the Advisory Committee was informed that steps had

been taken to rectify some of the problems that had been pointed out in earlier audits. In this regard, the Committee was informed that UNRWA had established a small unit with the objective of consolidating all the administrative needs of the Fund and thereby curtailing administrative costs. The Committee believes that the administration and management of the Fund should be separate from that of UNRWA and trusts that the newly created unit will be adequately staffed with qualified personnel. The Advisory Committee also believes that the administrative costs reflected in paragraph 96 of the Board's report are high and that every effort should be made by the Administration to lower them.

65. The Advisory Committee agrees with the Board's view, contained in paragraph 120 of its report, that "the Provident Fund Advisory Committee's advice cannot compensate for the lack of expert consultation", especially when making "recommendations on highly specialized issues that require expertise". The Committee also agrees with the Board's view that preservation of capital is of primary importance (para. 121). In this connection, the Committee notes with concern that the Provident Fund Advisory Committee does not have the necessary expertise and on occasion has made decisions, such as disallowing investment, in equities while allowing investment in highly speculative ventures, such as futures, warrants and options.

66. Under the circumstances, the Committee believes that the establishment of an investment advisory committee with the necessary expertise is essential. Moreover, the Advisory Commitee recommends that the investment advisory committee should make recomendations directly to the Commissioner-General. In this connection, the Committee is of the view that the doctrine of acquired rights should not be invoked in this instance.

United Nations Institute for Training and Research

67. In view of the precarious financial situation of the Institute, the Advisory Committee agrees with the Board's observation contained in paragraph 19 of its report, 9/ that the UNITAR Administration should take all necessary measures to ensure that its expenditures are within the approved budget and allotment. The Advisory Committee also agrees with the Board's observation (para. 39) that the UNITAR Administration should make an entry in their accounts for 1989 for the liability of $73,138.69 relating to rent owed to the United Nations for the UNITAR Geneva office.

68. The Advisory Committee has no comments on the reports of the Board of Auditors on the accounts of the International Trade Centre, the United Nations University, UNEP and the United Nations Habitat and Human Settlements Foundation.

Notes

1/ Official Records of the General Assembly, Forty-fifth Session, Supplement No. 5 (A/45/5), vol. I, and Corr.1.

2/ Ibid., vol. II.

3/ Ibid., vol. III.

4/ Ibid., Supplement No. 5B (A/45/5/Add.2) and Corr.1.

5/ Ibid., Supplement No. 5A (A/45/5/Add.1).

6/ Ibid., Supplement No. 5G (A/45/5/Add.7).

7/ Ibid., Supplement No. 5E (A/45/5/Add.5).

8/ Ibid., Supplement No. 5C (A/45/5/Add.3).

9/ Ibid., Supplement No. 5D (A/45/5/Add.4).

10/ Ibid., Supplement No. 5F (A/45/5/Add.6) and Corr.1.

11/ Ibid., Supplement No. 5H (A/45/5/Add.8) and Corr.1.

12/ Ibid., Supplement No. 9 (A/45/9).

13/ Ibid., Forty-fourth Session, Supplement No. 7 (A/44/7 and Corr.1 and 2).

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FINANCIAL REPORTS AND AUDITED FINANCIAL STATEMENTS AND REPORTS OF THE BOARD OF AUDITORS

Report of the Advisory Committee on Administrative and Budgetary Questions

Corrigendum

Page 5, paragraph 22

The paragraph should read as follows:

22. For reasons given in paragraph 191 of its report, the Board believes that the cost-sharing ratios for common services should be reassessed. The Board was informed that the United Nations Office at Vienna is prepared to propose a review in pending negotiations among that Office, the United Nations Industrial Development Organization and the International Atomic Energy Agency. The Advisory Committee welcomes the comments of the Board in this regard; for its part, it intends to follow up this issue in the context of the Committee's examination of the 1992-1993 programme budget.

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